Collaborating to Compete in the New Economy

Addendum II

# Results of the Economic Base and Industry Cluster Studies

**Economic Base Analysis for the San Diego Region**



**Economic Base Analysis for the Bay Area**



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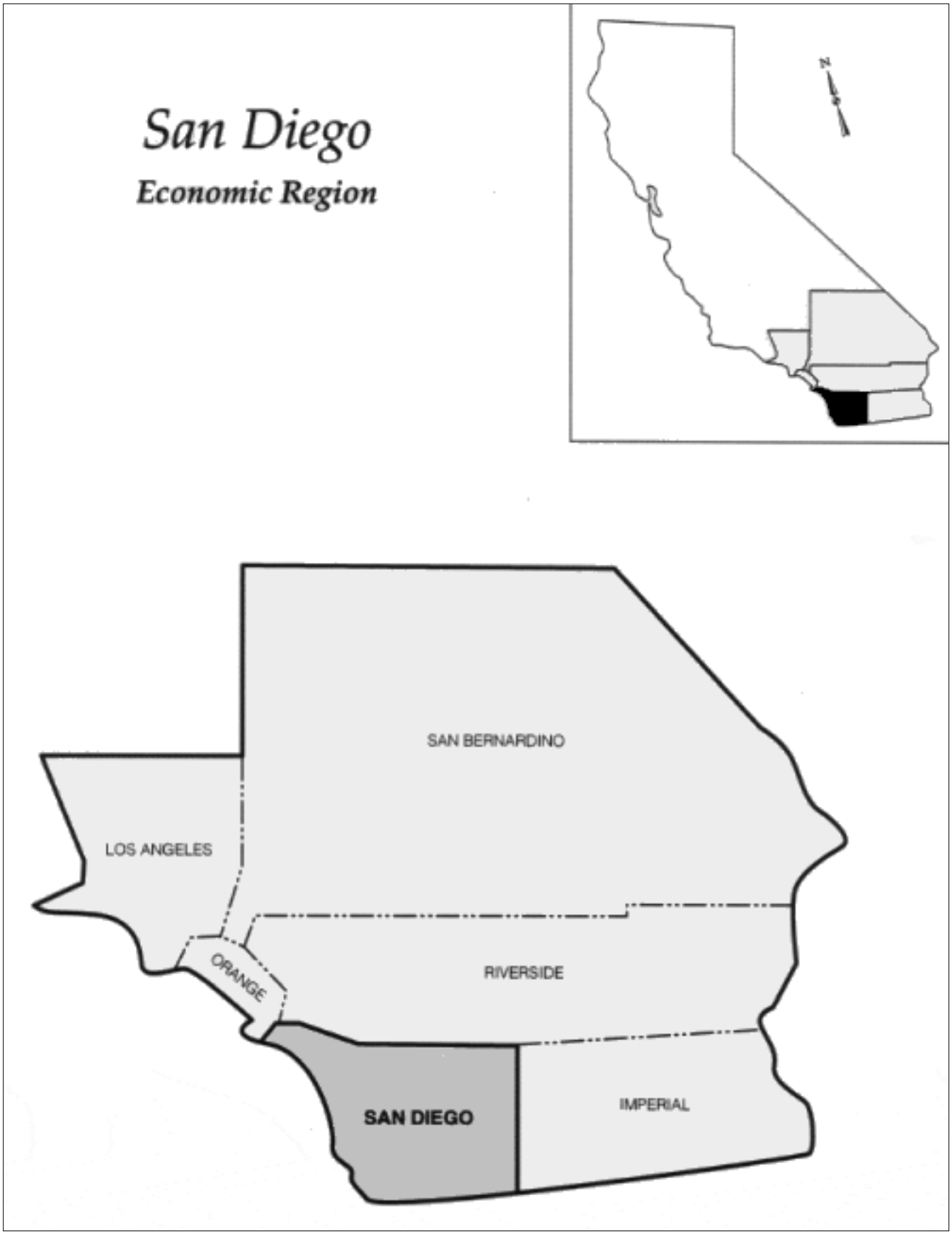

# SUMMARY

## BACKGROUND

The economic base analysis for the San Diego Region was intended to provide members of the State Strategy Panel and participants of the Regional Forum with a statistical picture of the region's economic structure and recent trends. The primary database for the study was ES202 provided by the Labor Market Information Division of the California Employment Development Department, supplemented by ES202 data from the Minnesota IMPLAN Group, Inc. At the time this project was initiated, the most accurate and consistent series of employment data available was for the period from 1991 to 1994 (1991 to 1993 in the case of IMPLAN data). Since the State Strategy effort is intended to promote long-term economic monitoring at the state and regional levels, the relatively short time series presented in this study will be added to and further developed over time. The economic base analysis highlights two of the San Diego Region's many industrial sectors--Telecommunications and Health Care Products and Services.

## KEY FINDINGS FROM THE ECONOMIC BASE ANALYSIS

### Changes in the Location of Employment

- The region was defined as a single-county area comprising San Diego County. For several indicators, the study compared San Diego relative to the larger Southern California region, made up of Los Angeles, Orange, San Bernardino, Riverside, and Imperial Counties.
- In 1993, the San Diego region had a total employment base of 779,200. San Diego, combined with the five counties of the larger Southern California region, had an aggregate employment of more than 5.6 million (with San Diego making up 14% of this total).
- During the recession period, 1991 and 1993, San Diego lost slightly more than 23,000 jobs, a decline of 2.9%. In comparison, the Southern California region overall lost almost 337,000 jobs or a reduction of 5.7%. Statewide employment contracted by 4.1%.
- The most significant decline in absolute numbers (-14,400) occurred in manufacturing where the employment level fell from 132,600 in 1991 to 118,200 in 1993. The largest percentage decline (-19.5%), occurred in the construction sector with the number of jobs shrinking from 48,970 in 1991 to 39,440 in 1993.
- The largest gains in employment were experienced in the services sector (+6,400 jobs). Retail jobs also grew slightly (+280 jobs). Although mining shows a large increase, the statistics may be distorted by changes in the way employment in this sector is categorized.

**Changes in Earnings**

- The San Diego region had a total payroll of more than $20 billion in 1993. This amount constituted 12.3% of total private-sector payroll in the larger Southern California region and 6.7% statewide.
- Comparing San Diego's share of the region's employment (13.9%) to its share of the region's payroll (12.3%) yields an earnings-to-jobs index of 88.5. This value indicates that San Diego, on average, has an employment base that is lower paid than the region as a whole.
- Almost half of San Diego's payroll in 1993 was generated by two sectors: services (36.1%) and retail trade (13.8%).
- With the exception of agriculture and manufacturing, average earnings in San Diego were lower than those for the region as a whole. For example, in 1993, average earnings in retail trade were $14,837 in San Diego compared to $16,359 in Southern California; average earnings in the services sector were $25,919 in San Diego compared to $29,973 in the larger region; and, in the generally more lucrative FIRE sector, average earnings in San Diego were $31,476 compared to $37,744 in Southern California. Across all economic sectors, average earnings amounted to $25,672 or some $3,400 less than the same average for the Southern California economy as a whole.

**Employment by Sector**

- The distribution of employment across industrial categories shows a relatively high proportion of service jobs. Retail trade and services collectively account for 59.6% of total employment. In the larger Southern California region, these two sectors account for 54.1% of total employment.
- The agriculture and construction industries are also proportionally larger in San Diego than in Southern California as a whole.
- On the other hand, employment levels in manufacturing and wholesale trade are proportionally smaller in San Diego than in the larger region. For example, manufacturing made up 15.2% of the San Diego employment base in 1993, and 19.2% of the Southern California employment base.

**Leading Industrial Employers**

- In 1993, the top nine industries in San Diego were related to services. The top five industries in terms of employment included: hotels and motels (23,799 jobs), hospitals (21,914 jobs), personnel supply services (18,846 jobs), research and testing services (18,076 jobs), and medical offices and clinics (16,119 jobs).
- The importance of defense-related and high-technology industries in San Diego is clearly evident in the top manufacturing industries, including: aircraft and parts (9,491 jobs), electronic component and accessories (8,204 jobs), ship and boat building and repairing (6,496 jobs), guided missiles, space vehicles and parts (5,699 jobs), and medical instruments and supplies (5,369 jobs).

**Largest Net Gains in Employment**

- Research and testing services topped the list of industries reporting employment gains between 1991 and 1993 (a recession period). Almost 4,250 jobs were added by businesses providing research and testing services. This increase is likely related to the growth in other high-technology industries, such as communications equipment (which added 968 jobs) and biotechnology, responsible for a substantial part of the net increase in drugs (+850 jobs) and industrial organic chemicals (+640 jobs).
- There was significant growth in various business services during the 1991-93 period. The list of 30 fastest growing industries includes: personnel supply services, computer and data processing services, building management and maintenance services, advertising, and miscellaneous services. Together, they produced 4,720 net new jobs.
- Industries related to apparel also experienced notable job growth. Three types of apparel manufacture (women's outerwear, men's suits and coats, and men's furnishings) contributed a net increase of more than 1,720 jobs. Apparel distribution added another 790 jobs.

**Leading Payroll Generators**

- Health and professional services are among the top payroll generators. Hospitals, medical clinics, and offices had a collective payroll of approximately $1.45 billion in 1993. Five other top ten industries (research and testing services, legal service, computer and data processing services, engineering and architectural services, and management and public relations) had a total payroll of $2.34 billion.
- There are nine manufacturing industries on the list of top 30 industries with the largest payroll in San Diego: aircraft and parts; electronic components and accessories; guided missiles, space vehicles and parts; computer and office equipment; measuring and controlling devices; ship and boat building and repairing; medical instruments and supplies; communications equipment; and household audio and video equipment. While the markets for these industries range from defense to civilian consumers, all of these industries incorporate advanced technologies. They had a combined payroll of $2.12 billion in 1993.

**Industries that are Highly Concentrated in the San Diego Region**

- The concentration index (or Location Quotient) was used to determine which industries have high aggregations of employment in San Diego relative to the larger Southern California region.
- The highest concentration index in San Diego is for botanical gardens and zoos which is not surprising given the extensive operations of the San Diego Zoo.
- The concentration index is significant because it identifies industries that are among the leading export-oriented producers in the region. Over half of the industries with high concentration indices are in manufacturing. And among these, the industries are quite diverse, ranging from books and sporting goods to engines and turbines and communications equipment.

**Comparison of Economic Performance between San Diego and the Larger Southern**

**California Region**

By comparing San Diego's economic performance against the larger region, we can identify activities and trends that are running counter those of the larger economic context. It provides one set of signals about the types of industries that might have a competitive advantage (or disadvantage) by virtue of its location in the San Diego area. And, like all indicators, they suggest directions for further inquiry and continued monitoring.

- There were a number of industries that registered employment growth at both the county and the regional levels between 1991 and 1993, but grew faster in San Diego. The most significant industries fitting this pattern were research and testing services (+4,246 jobs), communications equipment (+3,594 jobs), drugs (+850 jobs), and toys and sporting goods (+716 jobs).
- In some industries, employment grew in San Diego even though the Southern California region experienced overall decline. This pattern characterized women's outerwear (+1,106 jobs), preserved fruits and vegetables (+484 jobs), advertising (+347 jobs), meat products (+307 jobs), and miscellaneous nonmetallic mineral products (+303 jobs).
- In other industries, employment declined in San Diego, despite the fact that the Southern California region as a whole registered employment growth. Included in this category were miscellaneous health and allied services (-1,033 jobs), special industrial machinery (-313 jobs), and residential care (-269 jobs).

***Two industry clusters were featured at the San Diego Regional Form: Health Care Products and Services and Telecommunications.***

**Health Care Products and Services Cluster**

- The health care products and services cluster contains several distinct components, including biotechnology; industrial and medical chemicals; biomedical instruments, equipment, and supplies; pharmaceuticals; and medical services.
- In 1993, this cluster employed approximately 61,500 persons, constituting about 8% of private-sector jobs in the San Diego region. In comparison health care products and services made up 5% of the Southern California and state economies, respectively.
- The cluster increased by almost 8,000 jobs between 1991 and 1993, a net change of almost 15%.
- Within the cluster, the biomedical instruments and medical services components declined, but all other components grew. Growth was particularly evident in the biotechnology component which added more than 8,700 jobs, an increase of 95% over the two-year period. Biotechnology is also the component which is most highly concentrated in San Diego (with a Location Quotient of 3.96).
- Annual average earnings for the cluster is high--$39,156 in 1993. In comparison, earnings for all San Diego jobs in 1993 averaged $25,672.

**Telecommunications**

- In 1993, the telecommunications cluster employed an estimated 24,700 workers in San Diego. A Location Quotient of 2.07 for the cluster overall is evidence of its concentration in the region.
- The telecommunications cluster is comprised of three components: equipment, telecommunications services, and engineering and research services. Of these, San Diego has a particular specialization in engineering and research services.
- During the 1991-93 period, cluster-wide employment declined by 2,300 jobs. Especially hard hit was the equipment component.
- Although the telecommunications cluster is a relatively small part of the region's economy (accounting for about 1.5% of total employment), jobs are generally well-paid, therefore the cluster has a disproportionately large affect on payroll.
- Annual average earnings for the cluster were $46,766 in 1993, which was substantially higher than the average of $25,672 for the San Diego economy as a whole.

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- How many jobs are located in the San Diego region?
- How are the jobs distributed across economic sectors?
- How does the distribution of jobs in San Diego compare to the larger Southern California economy and to California as a whole?

**TABLE 1**
**1993 Employment in San Diego County, Southern California, and California**

| | San Diego County | | Region* | | California | |
|---|---|---|---|---|---|---|
| Sector | 1993 Employment | % of Total Employment | 1993 Employment | % of Total Employment | 1993 Employment | % of Total Employment |
| Agriculture | 18,297 | 2.3% | 100,477 | 1.8% | 434,488 | 4.2% |
| Mining | 2,630 | 0.3% | 15,350 | 0.3% | 33,351 | 0.3% |
| Construction | 39,439 | 5.1% | 220,345 | 3.9% | 441,697 | 4.3% |
| Manufacturing | 118,191 | 15.2% | 1,074,686 | 19.2% | 1,793,222 | 17.4% |
| Transportation, Communication and Public Utilities | 35,550 | 4.6% | 304,376 | 5.4% | 590,116 | 5.7% |
| Wholesale Trade | 38,666 | 5.0% | 402,134 | 7.2% | 680,459 | 6.6% |
| Retail Trade | 185,634 | 23.8% | 1,130,015 | 20.2% | 2,114,234 | 20.5% |
| Finance, Insurance, Real Estate | 62,133 | 8.0% | 445,444 | 7.9% | 795,617 | 7.7% |
| Services | 278,696 | 35.8% | 1,900,607 | 33.9% | 3,380,653 | 32.8% |
| Total | 779,236 | 100.0% | 5,606,355 | 100.0% | 10,301,680 | 100.0% |
| San Diego Employment as % of the Region* | 13.9% | | | | | |

* Region includes the Counties of San Diego, Imperial, Riverside, San Bernardino, Orange, and Los Angeles.

Source: Based on ES202 data from the Minnesota IMPLAN Group, 1991, 1993.

- How did employment levels fare during the 1991-93 recession period?

**TABLE 2**
**Employment Change in San Diego, Southern California, and California, 1991-93**

| Sector | 1991 Employment | 1993 Employment | Net Change Employment 1991-93 | Pct. Change Employment 1991-93 |
|---|---|---|---|---|
| Agriculture | 18,672 | 18,297 | (375) | -2.0% |
| Mining | 549 | 2,630 | 2,081 | 379.1% |
| Construction | 48,970 | 39,439 | (9,531) | -19.5% |
| Manufacturing | 132,614 | 118,191 | (14,423) | -10.9% |
| Transportation, Communication and Public Utilities | 36,851 | 35,550 | (1,301) | -3.5% |
| Wholesale Trade | 41,410 | 38,666 | (2,744) | -6.6% |
| Retail Trade | 185,354 | 185,634 | 280 | 0.2% |
| Finance, Insurance, Real Estate | 63,427 | 62,133 | (1,294) | -2.0% |
| Services | 272,295 | 278,696 | 6,401 | 2.4% |
| Total, San Diego | 802,408 | 779,236 | (23,172) | -2.9% |
| Southern California Region* | 5,943,170 | 5,606,355 | (336,815) | -5.7% |
| California | 10,738,600 | 10,301,680 | (436,920) | -4.1% |

* Region includes the Counties of San Diego, Imperial, Riverside, San Bernardino, Orange, and Los Angeles.

Source: Based on ES202 data from the Minnesota IMPLAN Group, 1991, 1993.

- What is the size of the payroll generated by private-sector jobs in the San Diego region?
- How are payroll earnings distributed across economic sectors?
- How does the distribution of earnings in San Diego compare to the larger Southern California economy and to California as a whole?

**TABLE 3**
**1993 Earnings in San Diego County, Southern California, and California**

| | San Diego County | | Region* | | California | |
|---|---|---|---|---|---|---|
| Sector | 1993 Payroll ($ mil.) | % of Total Payroll | 1993 Payroll ($ mil.) | % of Total Payroll | 1993 Payroll ($ mil.) | % of Total Payroll |
| Agriculture | 289.1 | 1.4% | 1,549.6 | 0.9% | 6,282.2 | 2.1% |
| Mining | 68.0 | 0.3% | 596.2 | 0.4% | 1,721.6 | 0.6% |
| Construction | 1,164.3 | 5.8% | 6,788.6 | 4.2% | 13,776.0 | 4.6% |
| Manufacturing | 4,061.0 | 20.3% | 36,526.7 | 22.4% | 65,416.0 | 22.1% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Transportation, Communication and Public Utilities | 1,254.9 | 6.3% | 10,877.5 | 6.7% | 21,477.6 | 7.2% |
| Wholesale Trade | 1,233.7 | 6.2% | 14,262.8 | 8.7% | 24,455.0 | 8.3% |
| Retail Trade | 2,754.2 | 13.8% | 18,486.2 | 11.3% | 34,313.1 | 11.6% |
| Finance, Insurance, Real Estate | 1,955.7 | 9.8% | 16,812.9 | 10.3% | 29,590.4 | 10.0% |
| Services | 7,223.4 | 36.1% | 56,966.8 | 34.9% | 98,398.2 | 33.2% |
| Total | 20,004.3 | 100.0% | 163,145.5 | 100.0% | 296,378.9 | 100.0% |
| San Diego Employment as % of the Region* | 12.3% | | | | | |

* Region includes the Counties of San Diego, Imperial, Riverside, San Bernardino, Orange, and Los Angeles.

Source: Based on ES202 data from the Minnesota IMPLAN Group, 1991, 1993.

- How did payroll levels fare during the 1991-93 recession period?

**TABLE 4**
**Payroll Change in San Diego, Southern California, and California, 1991-93**

| Sector | 1991 Payroll ($ mil.) | 1991 Payroll (Adj. 93 $mil.)* | 1993 Payroll ($ mil.) | Net Change Payroll 1991-93 | Pct. Change Payroll 1991-93 |
|---|---|---|---|---|---|
| Agriculture | 291.0 | 305.6 | 289.1 | (16.5) | -5.4% |
| Mining | 20.3 | 21.3 | 68.0 | 46.7 | 219.2% |
| Construction | 1,416.8 | 1,487.9 | 1,164.3 | (323.6) | -21.7% |
| Manufacturing | 4,350.5 | 4,568.9 | 4,061.0 | (507.9) | -11.1% |
| Transportation, Communication and Public Utilities | 1,215.7 | 1,276.7 | 1,254.9 | (21.8) | -1.7% |
| Wholesale Trade | 1,214.8 | 1,275.8 | 1,233.7 | (42.1) | -3.3% |
| Retail Trade | 2,580.3 | 2,709.9 | 2,754.2 | 44.3 | 1.6% |
| Finance, Insurance, Real Estate | 1,810.2 | 1,901.1 | 1,955.7 | 54.6 | 2.9% |
| Services | 6,536.9 | 6,865.1 | 7,223.4 | 358.3 | 5.2% |
| Total, San Diego | 19,479.6 | 20,457.6 | 20,004.3 | (453.3) | -2.2% |
| Southern California Region** | 162,470.2 | 172,696.4 | 163,145.5 | (9,550.9) | -5.5% |
| California | 288,365.8 | 306,414.3 | 296,378.9 | (10,035.4) | -3.3% |

* 1991 payroll values adjusted to 1993 dollars based on the Consumer Price Index.

** Region includes the Counties of San Diego, Imperial, Riverside, San Bernardino, Orange, and Los Angeles.

Source: Based on ES202 data from the Minnesota IMPLAN Group, 1991, 1993.

- How do average sectoral earnings in San Diego compare to the larger region and the state?

**TABLE 5**
**1993 Average Earnings in San Diego County, Southern California, and California**

| Sector | San Diego County Avg. Earnings ($) | Region* Avg. Earnings ($) | California Avg. Earnings ($) |
|---|---|---|---|
| Agriculture | 15,802 | 15,422 | 14,459 |
| Construction | 29,522 | 30,809 | 31,189 |
| Manufacturing | 34,360 | 33,988 | 36,480 |
| Transportation, Communication and Public Utilities | 35,300 | 35,737 | 36,396 |
| Wholesale Trade | 31,906 | 35,468 | 35,939 |
| Retail Trade | 14,837 | 16,359 | 16,230 |
| Finance, Insurance, Real Estate | 31,476 | 37,744 | 37,192 |
| Services | 25,919 | 29,973 | 29,106 |
| Total | 25,672 | 29,100 | 28,770 |

* Region includes the Counties of San Diego, Imperial, Riverside, San Bernardino, Orange and Los Angeles

- Which industries provide the most jobs in the San Diego region?

**TABLE 6**
**Industries* with the Largest Employment in the San Diego Region, 1993**

| SIC | Description | Employment |
|---|---|---|
| 701 | Hotels and motels | 23,799 |
| 806 | Hospitals | 21,914 |
| 736 | Personnel supply services | 18,846 |
| 873 | Research and testing services | 18,076 |
| 801 | Offices & clinics of medical doctors | 16,119 |
| 738 | Miscellaneous business services | 15,931 |
| 799 | Misc. amusement, recreation services | 11,338 |
| 602 | Commercial banks | 11,311 |
| 653 | Real estate agents and managers | 10,929 |
| 372 | Aircraft and parts | 9,491 |
| 811 | Legal service | 9,175 |
| 871 | Engineering & architectural services | 9,035 |
| 737 | Computer and data processing services | 8,949 |
| 874 | Management and public relations | 8,856 |
| 367 | Electronic components and accessories | 8,204 |
| 805 | Nursing and personal care facilities | 7,967 |
| 651 | Real estate operators and lessors | 7,285 |
| 481 | Telephone communication | 6,532 |
| 373 | Ship and boat building and repairing | 6,496 |
| 504 | Wholesale-Prof. & commercial equipment | 6,485 |
| 802 | Offices and clinics of dentists | 6,400 |
| 421 | Trucking & courier services, ex. air | 5,835 |
| 152 | General building contractors | 5,795 |
| 376 | Guided missiles, space vehicles, parts | 5,699 |
| 078 | Landscape and horticultural services | 5,682 |
| 384 | Medical instruments and supplies | 5,369 |
| 734 | Services to buildings | 5,363 |
| 641 | Insurance agents, brokers, and service | 5,298 |
| 357 | Computer and office equipment | 5,165 |
| 519 | Wholesale-Misc. nondurable goods | 4,993 |

| | | |
|---|---|---|
| 382 | Measuring and controlling devices | 4,990 |
| | Total | 779,236 |

* Excludes retail and personal service industries.

- Which industries gained the largest number of jobs in the San Diego Region during a recent period?

**TABLE 7**
**Industries* Reporting the Largest Gains in Employment, 1991-93**

| SIC | Description | Employment Net Change |
|---|---|---|
| 873 | Research and testing services | 4,246 |
| 616 | Mortgage bankers and brokers | 1,698 |
| 738 | Miscellaneous business services | 1,602 |
| 736 | Personnel supply services | 1,509 |
| 233 | Women's and misses' outerwear | 1,106 |
| 366 | Communications equipment | 968 |
| 283 | Drugs | 850 |
| 799 | Misc. amusement, recreation services | 816 |
| 874 | Management and public relations | 810 |
| 513 | Apparel, piece goods, and notions-whlse | 793 |
| 651 | Real estate operators and lessors | 766 |
| 394 | Toys and sporting goods | 716 |
| 737 | Computer and data processing services | 704 |
| 286 | Industrial organic chemicals | 639 |
| 653 | Real estate agents and managers | 597 |
| 621 | Security brokers and dealers | 567 |
| 734 | Services to buildings | 559 |
| 808 | Home health care services | 555 |
| 203 | Preserved fruits and vegetables | 484 |
| 596 | Nonstore retailers | 455 |
| 729 | Miscellaneous personal services | 397 |
| 232 | Men's and boys' furnishings | 352 |
| 731 | Advertising | 347 |
| 829 | Schools & educational services, nec | 340 |
| 411 | Local and suburban transportation | 318 |
| 201 | Meat products | 307 |
| 329 | Misc. nonmetallic mineral products | 303 |
| 231 | Men's and boys' suits and coats | 269 |

| | | |
|---|---|---|
| 354 | Metalworking machinery | 255 |
| 751 | Automotive rentals, no drivers | 254 |

* Excludes retail industries.

- Which industries provide the largest payrolls in the San Diego Region?

**TABLE 8**
**Industries* with the Largest Payroll in the San Diego Region, 1993**

| SIC | Description | Payroll ($ 000) |
|---|---|---|
| 801 | Offices & clinics of medical doctors | 803,204 |
| 873 | Research and testing services | 797,531 |
| 806 | Hospitals | 647,630 |
| 811 | Legal service | 442,377 |
| 372 | Aircraft and parts | 433,526 |
| 737 | Computer and data processing services | 401,918 |
| 871 | Engineering & architectural services | 374,362 |
| 701 | Hotels and motels | 350,336 |
| 874 | Management and public relations | 322,672 |
| 736 | Personnel supply services | 321,606 |
| 602 | Commercial banks | 288,659 |
| 367 | Electronic components and accessories | 284,438 |
| 738 | Miscellaneous business services | 278,128 |
| 481 | Telephone communication | 270,185 |
| 504 | Prof. & commercial equipment-whlse | 270,087 |
| 653 | Real estate agents and managers | 266,632 |
| 376 | Guided missiles, space vehicles, parts | 236,584 |
| 357 | Computer and office equipment | 228,341 |
| 493 | Combination utility services | 210,746 |
| 616 | Mortgage bankers and brokers | 206,716 |
| 382 | Measuring and controlling devices | 204,045 |
| 373 | Ship and boat building and repairing | 199,073 |
| 384 | Medical instruments and supplies | 191,592 |
| 641 | Insurance agents, brokers, and service | 182,362 |
| 366 | Communications equipment | 182,087 |
| 802 | Offices and clinics of dentists | 179,308 |
| 506 | Electrical goods-whlse | 167,355 |
| 621 | Security brokers and dealers | 163,804 |
| 365 | Household audio and video equipment | 161,592 |

| | | |
|---|---|---|
| 152 | General building contractors | 160,391 |
| | Total All Industries | 20,004,342 |

* Excludes retail industries

- Which industries have a highly concentrated presence in the San Diego Region?

**TABLE 9**
**Industries* that are Highly Concentrated in the San Diego Region, 1993**

| SIC | Description | Concentration Index** |
|---|---|---|
| 842 | Botanical and zoological gardens | 6.98 |
| 493 | Combination utility services | 6.67 |
| 351 | Engines and turbines | 5.48 |
| 231 | Men's and boys' suits and coats | 5.47 |
| 704 | Membership-basis organization hotels | 5.33 |
| 373 | Ship and boat building and repairing | 5.29 |
| 286 | Industrial organic chemicals | 3.94 |
| 091 | Commercial fishing | 3.24 |
| 385 | Ophthalmic goods | 3.06 |
| 366 | Communications equipment | 2.59 |
| 873 | Research and testing services | 2.55 |
| 803 | Offices of osteopathic physicians | 2.37 |
| 448 | Water transportation of passengers | 2.34 |
| 365 | Household audio and video equipment | 2.27 |
| 273 | Books | 2.22 |
| 274 | Miscellaneous publishing | 2.22 |
| 394 | Toys and sporting goods | 2.14 |
| 702 | Rooming and boarding houses | 1.92 |
| 701 | Hotels and motels | 1.85 |
| 606 | Credit unions | 1.80 |
| 515 | Farm-product raw materials-whlse | 1.74 |
| 369 | Misc. electrical equipment & supplies | 1.73 |
| 654 | Title abstract offices | 1.69 |
| 352 | Farm and garden machinery | 1.64 |
| 376 | Guided missiles, space vehicles, parts | 1.62 |

* Excludes retail industries.

** The Location Quotient (LQ) is used as an indicator of relative concentration. It emasures employment in a particular industry as a share of total employment, then compares this ratio between the local (San Diego) and regional (Southern California) areas. Values greater than "1.00" indicate that the region has a proportionately larger share (or concentration) of employment in that industry.

- Among the industries that expanded in employment during 1991-93, which of them experienced relatively higher growth in San Diego than in the larger Southern California Region?

**TABLE 10**
**Industries in which Employment Growth in San Diego Exceeded Employment Growth in the Larger Southern California Region, 1991-93**

| | | San Diego | | | | Southern California | | | |
|---|---|---|---|---|---|---|---|---|---|
| SIC | Description | Employ. 1991 | Employ. 1993 | Net Change | Percent Change | Employ. 1991 | Employ. 1993 | Net Change | Percent Change |
| 286 | Industrial organic chemicals | 217 | 856 | 639 | 294.5% | 801 | 1,562 | 761 | 95.0% |
| 608 | Foreign bank & branches | 21 | 74 | 53 | 252.4% | 1,751 | 2,511 | 760 | 43.4% |
| 252 | Office furniture | 169 | 387 | 218 | 129.0% | 5,854 | 5,907 | 53 | 0.9% |
| 231 | Men's and boys' suits and coats | 233 | 502 | 269 | 115.5% | 536 | 660 | 124 | 23.1% |
| 232 | Men's and boys' furnishings | 354 | 706 | 352 | 99.4% | 5,019 | 5,794 | 775 | 15.4% |
| 489 | Communication services, nec | 116 | 201 | 85 | 73.3% | 1,291 | 1,629 | 338 | 26.2% |
| 279 | Printing trade services | 318 | 551 | 233 | 73.3% | 3,217 | 3,418 | 201 | 6.2% |
| 452 | Air transportation, nonscheduled | 84 | 139 | 55 | 65.5% | 1,299 | 1,361 | 62 | 4.8% |
| 513 | Apparel, piece goods-whlse | 1,390 | 2,183 | 793 | 57.1% | 23,150 | 26,722 | 3,572 | 15.4% |
| 283 | Drugs | 1,597 | 2,447 | 850 | 53.2% | 10,655 | 13,508 | 2,853 | 26.8% |
| 632 | Medical svc & health insurance | 371 | 561 | 190 | 51.2% | 16,870 | 17,446 | 576 | 3.4% |
| 808 | Home health care services | 1,084 | 1,639 | 555 | 51.2% | 8,311 | 9,894 | 1,583 | 19.0% |
| 366 | Communications equipment | 2,626 | 3,594 | 968 | 36.9% | 9,231 | 9,981 | 750 | 8.1% |
| 272 | Periodicals | 677 | 924 | 247 | 36.5% | 8,014 | 8,428 | 414 | 5.2% |
| 394 | Toys and sporting goods | 2,216 | 2,932 | 716 | 32.3% | 9,683 | 9,873 | 190 | 2.0% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 873 | Research and testing services | 13,830 | 18,076 | 4,246 | 30.7% | 47,212 | 50,948 | 3,736 | 7.9% |
| 358 | Refrigeration & svc machinery | 437 | 529 | 92 | 21.1% | 6,460 | 6,817 | 357 | 5.5% |

- Which industries grew in San Diego, while declining in the larger Southern California Region?

**TABLE 11**
**Industries in which Employment Grew in San Diego, but Declined in the Larger Southern California Region, 1991-93**

| | | San Diego | | | | Southern California | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SIC** | **Description** | **Employ. 1991** | **Employ. 1993** | **Net Change** | **Percent Change** | **Employ. 1991** | **Employ. 1993** | **Net Change** | **Percent Change** |
| 379 | Misc. transportation equipment | 47 | 176 | 129 | 274.5% | 2,077 | 1,779 | (298) | -14.3% |
| 329 | Misc. nonmetallic mineral prod. | 152 | 455 | 303 | 199.3% | 3,117 | 2,856 | (261) | -8.4% |
| 222 | Broadwvn fabric mills, manmade | 63 | 155 | 92 | 146.0% | 273 | 254 | (19) | -7.0% |
| 201 | Meat products | 245 | 552 | 307 | 125.3% | 5,694 | 5,472 | (222) | -3.9% |
| 233 | Women's and misses' outerwear | 1,286 | 2,392 | 1,106 | 86.0% | 80,165 | 74,147 | (6,018) | -7.5% |
| 203 | Preserved fruits and vegetables | 697 | 1,181 | 484 | 69.4% | 15,092 | 13,491 | (1,601) | -10.6% |
| 354 | Metalworking machinery | 675 | 930 | 255 | 37.8% | 12,867 | 11,100 | (1,767) | -13.7% |
| 259 | Misc. furniture and fixtures | 591 | 732 | 141 | 23.9% | 5,126 | 3,871 | (1,255) | -24.5% |
| 731 | Advertising | 1,539 | 1,886 | 347 | 22.5% | 19,649 | 18,909 | (740) | -3.8% |
| 076 | Farm labor and management svcs | 705 | 852 | 147 | 20.9% | 11,703 | 11,178 | (525) | -4.5% |

- Which industries declined in San Diego, while employment grew in the larger Southern California Region?

**TABLE 12**
**Industries in which Employment Declined in San Diego, but Grew in the Larger Southern California Region, 1991-93**

| | | San Diego | | | | Southern California | | | |
|---|---|---|---|---|---|---|---|---|---|
| SIC | Description | Employ. 1991 | Employ. 1993 | Net Change | Percent Change | Employ. 1991 | Employ. 1993 | Net Change | Percent Change |
| 355 | Special industry machinery | 807 | 494 | (313) | -38.8% | 4,349 | 4,680 | 331 | 7.6% |
| 391 | Jewelry, silverware & plated ware | 97 | 64 | (33) | -34.0% | 2,997 | 3,133 | 136 | 4.5% |
| 809 | Health and allied services, nec | 4,459 | 3,426 | (1,033) | -23.2% | 15,371 | 15,978 | 607 | 3.9% |
| 781 | Motion picture prod. & svcs | 572 | 477 | (95) | -16.6% | 75,872 | 83,268 | 7,396 | 9.7% |
| 278 | Blankbooks and bookbinding | 252 | 221 | (31) | -12.3% | 5,937 | 6,062 | 125 | 2.1% |
| 349 | Misc. fabricated metal products | 374 | 332 | (42) | -11.2% | 10,039 | 10,096 | 57 | 0.6% |
| 473 | Freight transp. arrangement | 899 | 822 | (77) | -8.6% | 14,026 | 14,087 | 61 | 0.4% |
| 733 | Mailing, reproduction, steno. | 2,662 | 2,460 | (202) | -7.6% | 20,601 | 21,510 | 909 | 4.4% |
| 836 | Residential care | 4,636 | 4,367 | (269) | -5.8% | 25,391 | 27,615 | 2,224 | 8.8% |
| 628 | Security and commodity services | 652 | 625 | (27) | -4.1% | 6,105 | 6,927 | 822 | 13.5% |
| 484 | Cable and other pay TV services | 1,865 | 1,798 | (67) | -3.6% | 10,592 | 10,679 | 87 | 0.8% |
| 422 | Public warehousing and storage | 683 | 668 | (15) | -2.2% | 8,926 | 10,411 | 1,485 | 16.6% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 633 | Fire, marine & casualty insurance | 3,999 | 3,941 | (58) | -1.5% | 32,585 | 33,655 | 1,070 | 3.3% |

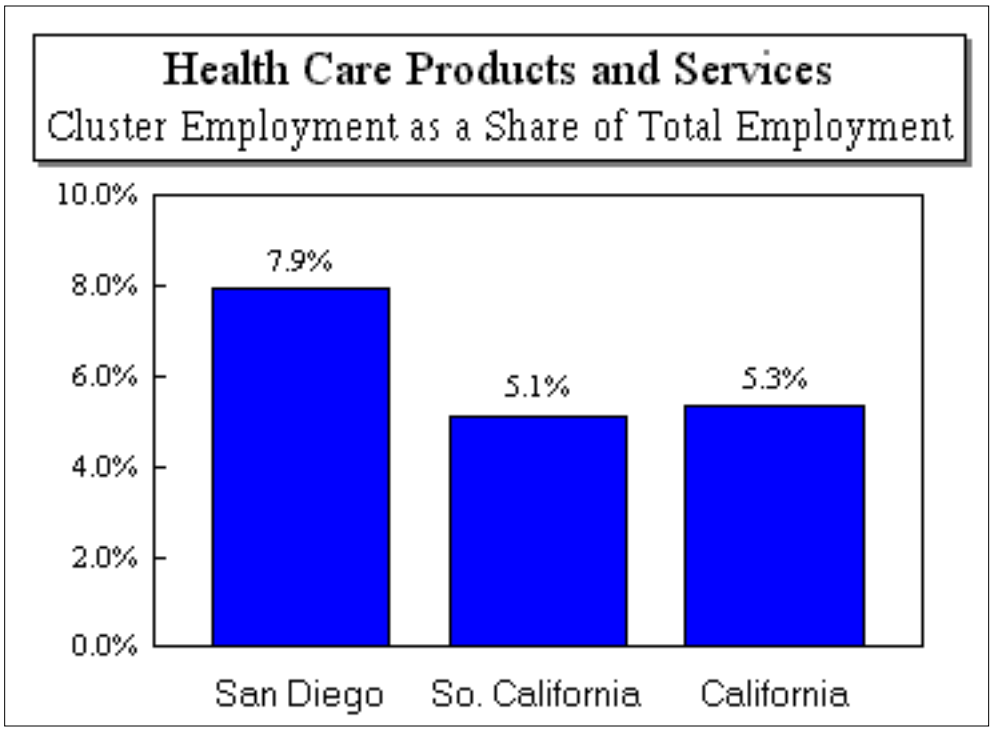
Previous Page | The New Economy Addendum II | Next Page

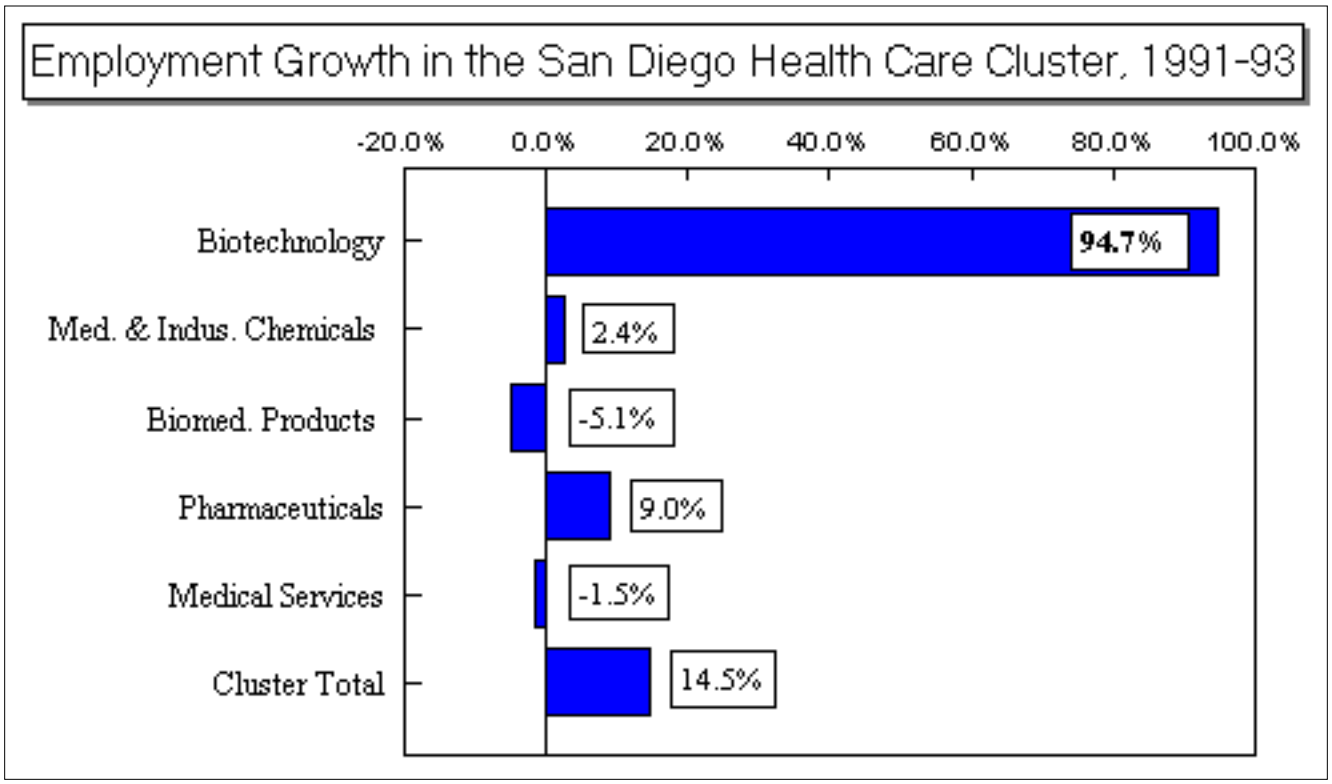
**TABLE 13**
**Health Care Products and Services Cluster in the San Diego Region**

| Description | 1991 Employment | 1993 Employment | Net Change 1991-93 | %Change 91-93 | 1993 LQ* | 1993 Avg. Earn. |
|---|---|---|---|---|---|---|
| Biotechnology | 9,223 | 17,956 | 8,732 | 94.7% | 3.96 | $41,426 |
| Med. & Indus. Chemicals | 954 | 977 | 23 | 2.4% | 0.46 | $48,546 |
| Biomed. Products | 8,953 | 8,494 | (459) | -5.1% | 2.22 | $33,538 |
| Pharmaceuticals | 1,506 | 1,642 | 136 | 9.0% | 0.37 | $37,734 |
| Medical Services | 32,986 | 32,477 | (509) | -1.5% | 1.30 | $39,160 |
| Cluster Total | 53,622 | 61,546 | 7,924 | 14.8% | 1.55 | $39,156 |

* The Location Quotient (LQ) is an indicator of relative concentration. It measures employment in a particular industry as a share of total employment, then compares this ratio at the regional and national levels. Values greater than "1.00" indicate that the region has a proportionately larger share (or concentration) of employment in the particular industry.

Source: Based on ES202 data from the Minnesota IMPLAN Group, Inc., 1991, 1993





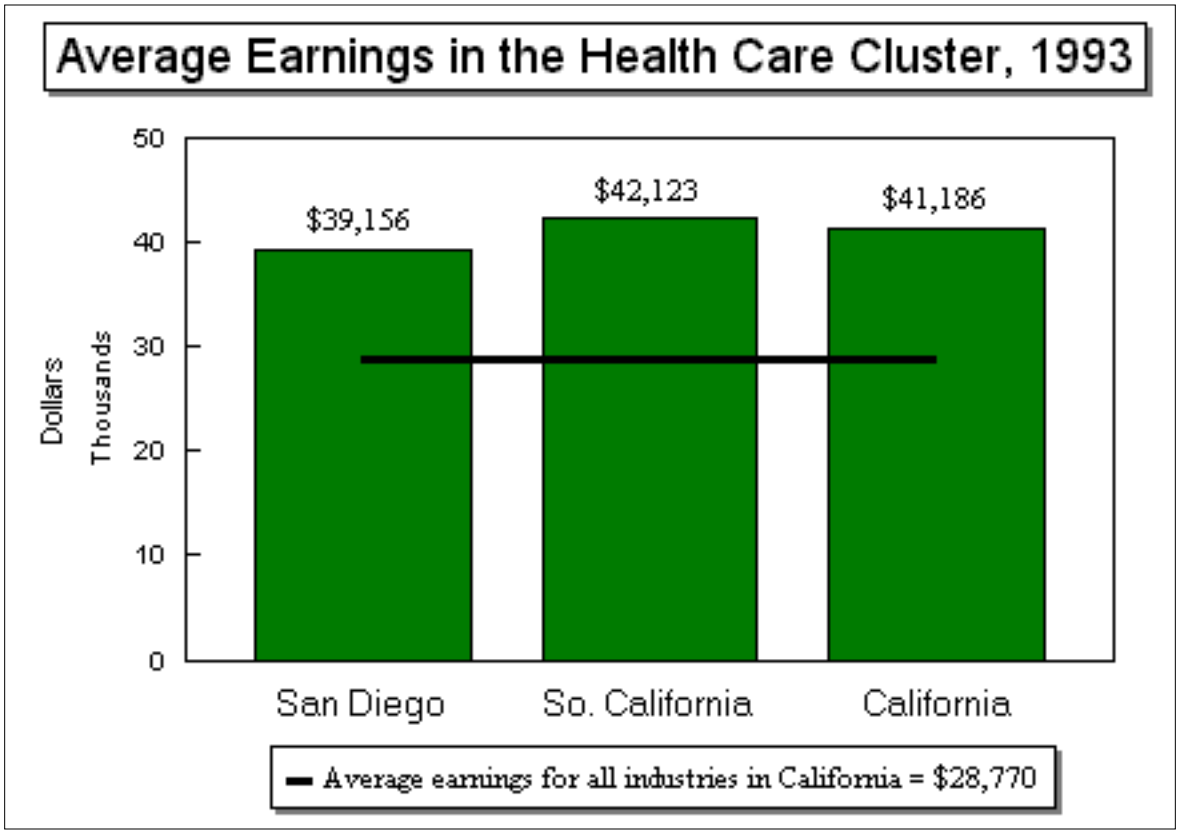



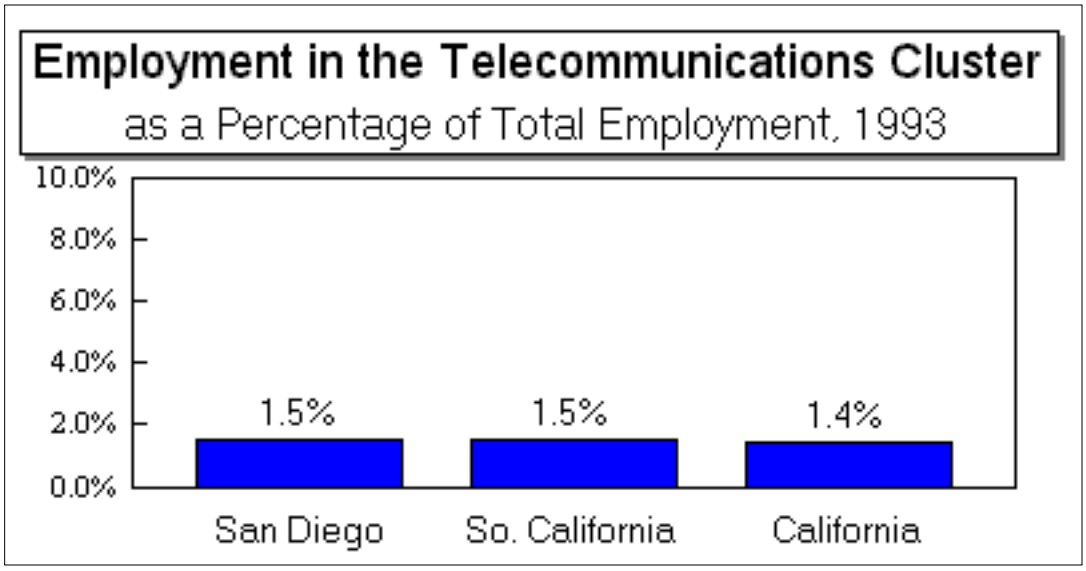

**Table 14**
**TELECOMMUNICATIONS CLUSTER**

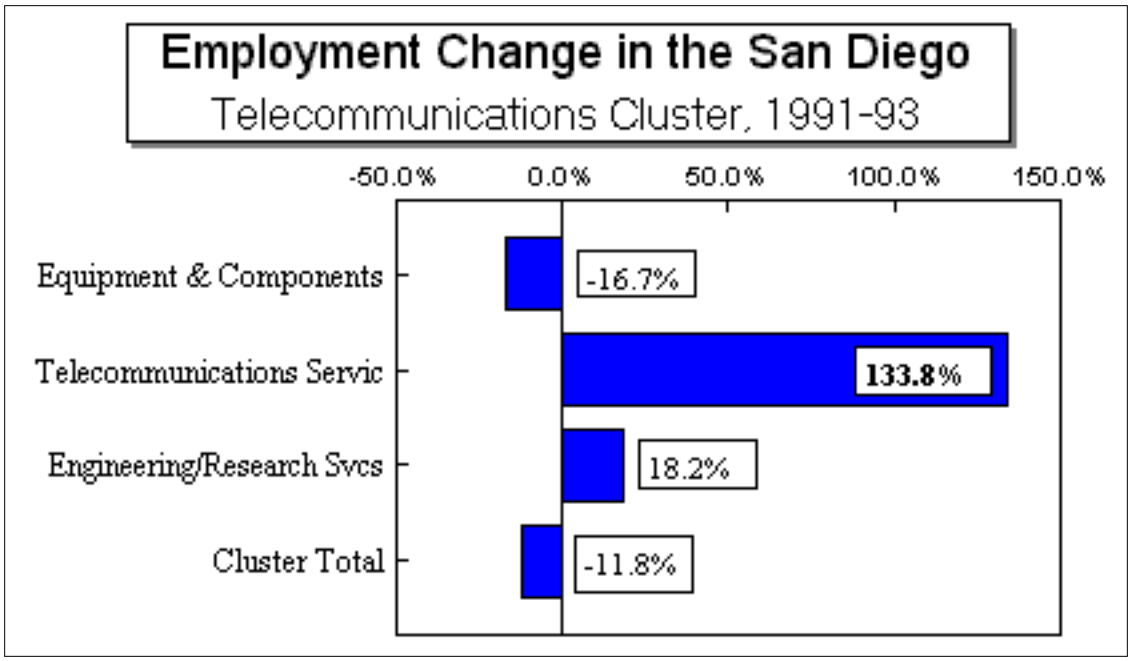
| Description | 1991 Employment | 1993 Employment | Net Change 1991-93 | %Change 1991-93 | LQ* 1993 | 1993 Avg. Earn. |
|---|---|---|---|---|---|---|

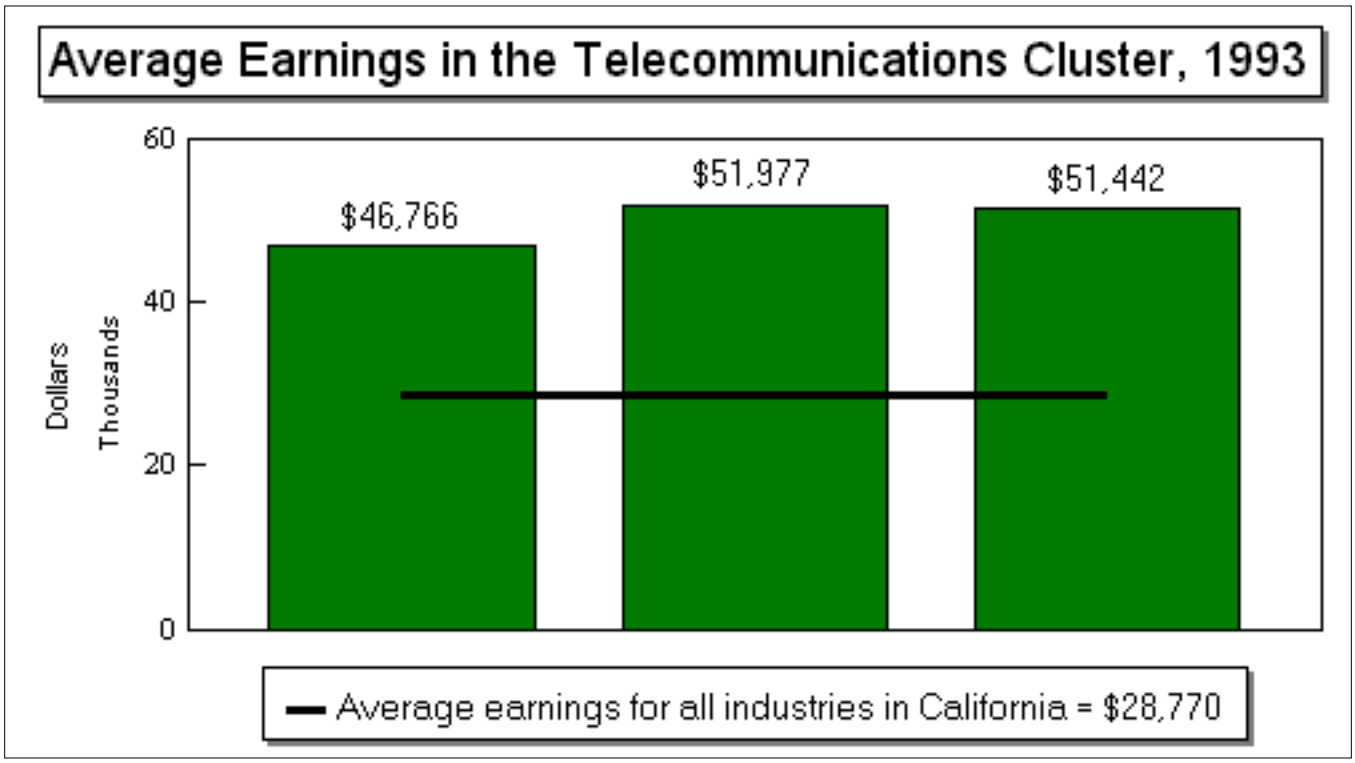
| | | | | | | |
|---|---|---|---|---|---|---|
| **Equipment & Components** | 8,805 | 7,338 | (1,467) | -16.7% | 1.83 | $47,692 |
| **Telecommunications Services** | 376 | 879 | 503 | 133.8% | 1.28 | $31,977 |
| **Engineering/Research Svcs** | 3,065 | 3,624 | 559 | 18.2% | 3.51 | $48,909 |
| **Cluster Total** | 27,982 | 24,682 | (2,336) | -11.8% | 2.07 | $46,766 |

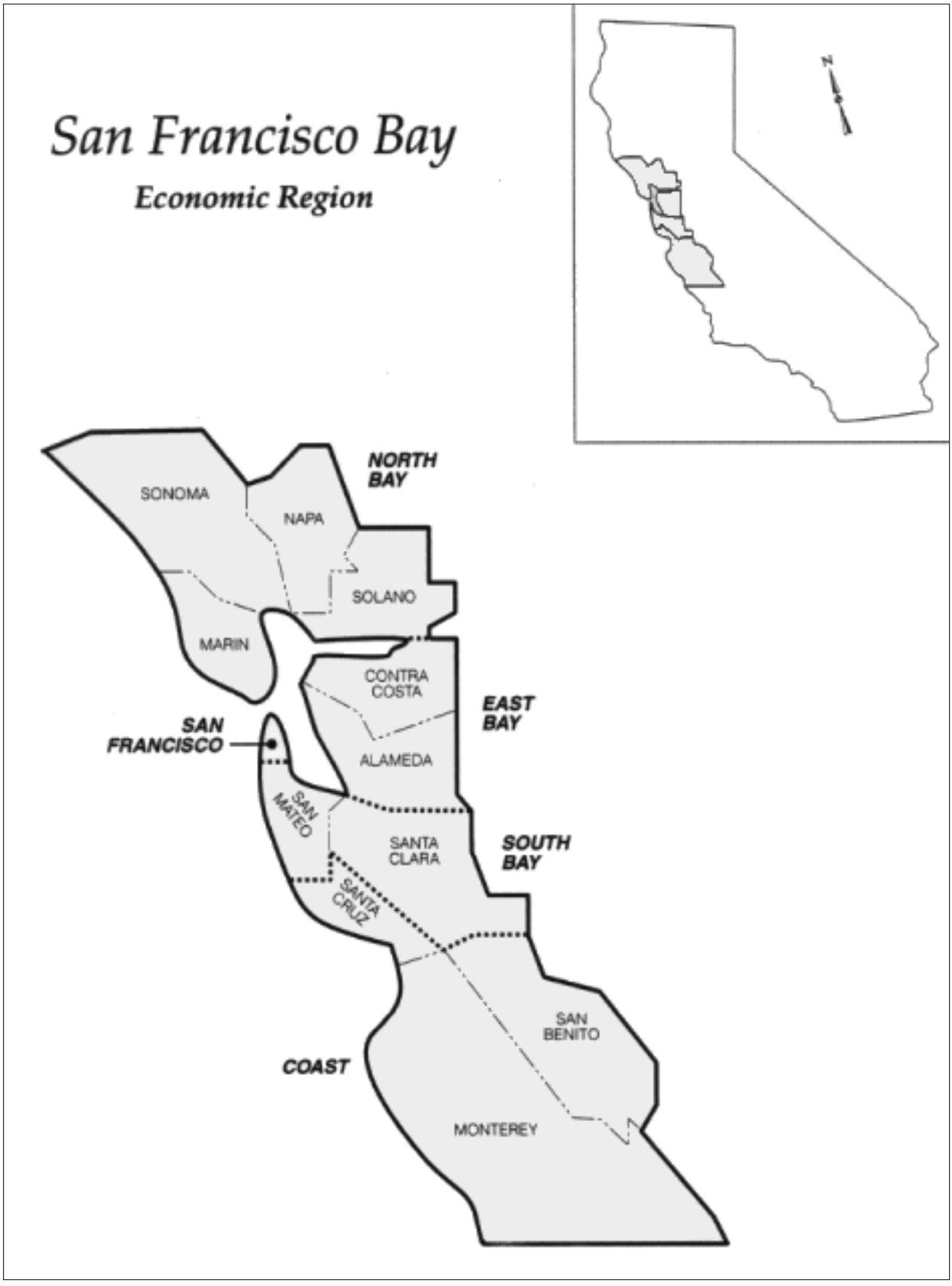
* The Location Quotient (LQ) is an indicator of relative concentration. It measures employment in a particular industry as a share of total employment, then compares this ratio at the regional and national levels. Values greater than "1.00" indicate that the region has a proportionately larger share (or concentration) of employment in the particular industry.

Source: Based on ES202 data from the Minnesota IMPLAN Group, Inc., 1991, 1993




Average Earnings in the Telecommunications Cluster, 1993
60
40
20
0
Dollars
Thousands
$46,766
$51,977
$51,442
Average earnings for all industries in California = $28,770


San Francisco Bay
Economic Region
N
NORTH BAY
SONOMA
NAPA
SOLANO
MARIN
CONTRA COSTA
EAST BAY
SAN FRANCISCO
ALAMEDA
SAN MATEO
SANTA CLARA
SOUTH BAY
SANTA CRUZ
SAN BENITO
COAST
MONTEREY

# SUMMARY

## BACKGROUND

The economic base analysis for the San Francisco Bay Area was intended to provide members of the State Strategy Panel and participants of the Regional Forum with a statistical picture of the region's economic structure and recent trends. The primary database for the study was ES202 provided by the Labor Market Information Division of the California Employment Development Department, supplemented by ES202 data from the Minnesota IMPLAN Group, Inc. At the time this project was initiated, the most accurate and consistent series of employment data available was for the period from 1991 to 1994. Since the State Strategy effort is intended to promote long-term economic monitoring at the state and regional levels, the relatively short time series presented in this study will be added to and further developed over time. The economic base analysis highlights two of the Bay Area's many industrial clusters--environmental technologies and multimedia. As examples of dynamic industrial activities that can serve as engines of regional growth, these two clusters were the subject of focus groups convened during the Regional Forum.

## KEY FINDINGS FROM THE ECONOMIC BASE ANALYSIS

### Changes in the Location of Employment

- The Bay Area lost almost 60,000 jobs during the recessionary period 1991-94.
- Four of the five subregions in the Bay Area experienced job losses during this period.
- The City and County of San Francisco led in job losses, accounting for 75.8% of net job losses in the Bay area.
- Santa Clara County also experienced significant job losses accounting for 37% of net job losses.
- However, three of the four North Bay counties, Marin, Solano, and Sonoma experienced net employment gains. Elsewhere, the Counties of San Benito and San Mateo also experienced net employment gains.
- These changes resulted in a shift in the distribution of employment from San Francisco to all the other regions in the Bay Area, with the exception of the Coast subregion, where employment overall remained relatively unchanged.

### Changes in Earnings

- The South Bay leads all Bay Area sectors in payroll earnings in 1994 with 42.3% of the total, followed by the East Bay with 25% and San Francisco with 18.9%. In comparison, the South Bay contains 37.2% of the region's jobs.

- San Francisco experienced the largest net decrease in payroll earnings during the 1991-94 period with a $179 million decline (in constant dollars).
- Despite this loss, however, San Francisco, along with the South Bay continues to have the best earnings-to-jobs ratio indicating a concentration of higher paying jobs in these two counties.

**Employment by Sector**

- The Bay Area has approximately the same distribution of employment across industrial categories as the State, with 33.9% of all jobs found in the services sector and 17.6% in manufacturing.
- The services sector is the major source of jobs for all subregions in the Bay Area. Among the subregions, San Francisco has the highest concentration of service sector jobs (43.6%) and the Coast subregion has the lowest concentration (25.6%).
- Retail trade is second in importance in San Francisco, the East Bay, and the North Bay. Agriculture is the second largest sector in the Coast subregion.
- Within the Bay Area, manufacturing is relatively most prominent in the South Bay, accounting for 27.1% of jobs in that subregion. This percentage far exceeds the 17.4% at the State level.
- Similarly, the percentage of services jobs in San Francisco at 43.6% of all San Francisco jobs exceeds the State figure of 32.8%.

**Employment Growth**

- Bay Area employment declined by 2.1% between 1991-93 compared to 4.1% for the State.
- Despite the overall decline, growth in employment in the Bay Area services sector between 1991-93 was 3.5% compared to 1.3% for the State.
- The South Bay subregion led services sector growth with 5.6% followed by the East Bay with 4.2% and the North Bay with 3.4%.
- The largest declines were in the construction sector where employment dropped by 15.1% and the wholesale trade sector where employment fell by 9.3%.
- Among the largest sources of services sector employment in the Bay Area are computer and data processing services, personnel supply services, and miscellaneous business services with a combined total of 178,000 jobs.
- Research and testing services, engineering and architectural services, and business management and public relations accounted for another 101,000 jobs in the professional services industries.
- Electronic components and accessories, computer and office equipment and measuring and controlling devices are the major sources of employment in manufacturing--accounting for over 152,000 jobs.
- Hospitals, offices and clinics of medical doctors and dentists, and nursing and personal care facilities combined for an additional 161,000 jobs in the personal services sector.

**Changes in Employment**

- Business, professional and personal services accounted for most of the employment growth in the Bay Area, with computer and data processing services alone accounting for a net increase of 13,510 jobs between 1991 and 1993.
- Miscellaneous business services, personnel supply services, management and public relations, research and testing services, communications services, residential care and nursing and personal care facilities contributed another 20,435 jobs.
- The largest declines in employment were in the manufacturing sector with the categories of computer and office equipment, electronic components and accessories, guided missiles, space vehicle parts, measuring and controlling devices, electric distribution equipment, miscellaneous transportation equipment, and general equipment industry accounting for a net loss of over 29,000 jobs.
- Some manufacturing industries grew during the recession, however, including makers of communications equipment, medical instruments and supplies, motor vehicles and equipment, special industry machinery, and products using purchased glass--with a combined total of over 8,000 jobs.

**Payroll Size and Increases**

- Major contributions to total payroll income in the Bay Area are made by the business, professional and health services fields, led by computer and data processing services with a regional payroll of $3.6 billion.
- Research and testing services, engineering & architectural services, and business management and public relations contributed another $5 billion, followed by hospitals and the offices and clinics of medical doctors with $4.9 billion.
- Several industries in the manufacturing sector were among the top payroll generators in the Bay Area. Electronic components and accessories, computer and office equipment, measuring and controlling devices, communications equipment, and guided missiles, space vehicles and parts, collectively, had a total payroll of almost $10.5 billion.
- Other leading contributors to total payroll were legal services, financial and real estate services, wholesale trade, and communications, transportation and utilities.
- Financial services industries appeared most frequently in a list of industries with the largest payrolls gains from 1991 to 1993. At the top of the list, however, was communications services which experienced a payroll increase of 279%.
- In contrast, declines in payrolls were found primarily in the manufacturing sector with 15 industries showing payroll losses ranging from 22% to 42%.

**Employment Concentration in the Bay Area**

- The Bay Area's national prominence in high-technology manufacturing is seen in the high location quotients for industries such as computer and office equipment (4.97), guided missiles, space vehicles and parts (4.72), electronic components and accessories (4.41), and measuring and controlling devices (3.93).
- Seven of the top 25 industries that increased in concentration were in the financial

services sector.

- Several Bay Area manufacturing industries became more concentrated, notably communications equipment, beverages, search and navigation equipment, periodicals, computer and office equipment, and medical instruments and supplies.

***Two industry clusters were featured at the San Francisco Bay Regional Forum: Environmental Technologies and Multimedia***

**Environmental Technologies Cluster**

- Approximately 29% of the state's environmental cluster was found in the Bay Area in 1993 for a total of 10,406 employees.
- Within the Bay Area, the South Bay had the largest share of environmental cluster employment (4,593 jobs), followed by the East Bay (3,564 jobs). While the South Bay's environmental jobs are predominantly in the areas of technical equipment and research and testing, the East Bay's jobs tend to be in the "lower tech" areas of blowers and fans, laboratory apparatus and furniture, and recycling.
- The environmental cluster contracted between 1991 and 1993, losing an estimated 790 jobs throughout the Bay Area.

**Multimedia Industry Cluster**

- Approximately 32.1% of the state's employment in the multimedia clusters was found in the Bay Area in 1993 for a total of 67,324 employees.
- Between 1991 and 1993, multimedia employment experienced a net increase of approximately 4,309 jobs or 6.8%. In comparison, multimedia grew 4.0% in the state as a whole.
- The South Bay has approximately two-thirds of the region's multimedia employment, primarily in the production of equipment and peripherals, storage media, and software.
- There are nodes of multimedia activity in the other subregions as well. For example, San Francisco has sizeable shares of employment in the creative aspects of multimedia, including photography, commercial art and graphics, and advertising. Although the North Bay has only about 5% of the Bay Area's multimedia cluster, it has a high proportion of employment in motion picture and video production (along with San Francisco). The Coast subregion contains significant multimedia activity in two areas: communications equipment and software development.

---

- How many jobs are located in the Bay Area and how are they distributed across the 12-county region?
- How did employment levels fare during the 1991-94 recession period?

**Table 1**
**Economic Overview of the Bay Area Region and Recent Changes: Employment**

| County/SUBREGION | Average Qtrly Employment 1991 | Average Qtrly Employment 1994 | Net Change Employment 1991-94 | Percent Change Employment 1991-94 |
|---|---|---|---|---|
| Alameda | 467,022 | 462,895 | (4,127) | -0.9% |
| Contra Costa | 242,694 | 242,124 | (570) | -0.2% |
| EAST BAY | 709,716 | 705,019 | (4,697) | -0.7% |
| Marin | 82,488 | 84,658 | 2,170 | 2.6% |
| Napa | 35,303 | 35,138 | (165) | -0.5% |
| Solano | 66,627 | 71,728 | 5,101 | 7.7% |
| Sonoma | 121,149 | 121,966 | 817 | 0.7% |
| NORTH BAY | 305,567 | 313,490 | 7,923 | 2.6% |
| San Francisco | 477,709 | 432,309 | (45,400) | -9.5% |
| SAN FRANCISCO | 477,709 | 432,309 | (45,400) | -9.5% |
| San Mateo | 250,541 | 260,347 | 9,806 | 3.9% |
| Santa Clara | 729,270 | 706,988 | (22,282) | -3.1% |
| SOUTH BAY | 979,811 | 967,335 | (12,476) | -1.3% |
| Santa Cruz | 75,833 | 71,293 | (4,540) | -6.0% |
| Monterey | 101,443 | 100,391 | (1,052) | -1.0% |
| San Benito | 7,312 | 7,694 | 382 | 5.2% |
| COAST | 184588 | 179378 | (5,210) | -2.8% |
| REGIONAL TOTAL | 2,657,391 | 2,597,531 | (59,860) | -2.3% |

Source: Based on ES202 data for 1994-1st Quarter from the California Labor Market Information Division, Employment Development Department.

* Adjusted to 1994 dollars using the Consumer Price Index.

- What proportion of the region's jobs are located in the various counties and subregions?
- Have there been shifts in the pattern of employment within the region?

**Table 1a**
**Economic Overview of the Bay Area Region and Recent Change:**
**Distribution of Employment**

| County / SUBREGION | % Share of Regional Employment 1991 | % Share of Regional Employment 1994 | Net Change in Share of Employment 1991-94 |
|---|---|---|---|
| Alameda | 17.6% | 17.8% | 0.25% |
| Contra Costa | 9.1% | 9.3% | 0.19% |
| EAST BAY | 26.7% | 27.1% | 0.43% |
| Marin | 3.1% | 3.3% | 0.16% |
| Napa | 1.3% | 1.4% | 0.02% |
| Solano | 2.5% | 2.8% | 0.25% |
| Sonoma | 4.6% | 4.7% | 0.14% |
| NORTH BAY | 11.5% | 12.1% | 0.57% |
| San Francisco | 18.0% | 16.6% | -1.33% |
| SAN FRANCISCO | 18.0% | 16.6% | -1.33% |
| San Mateo | 9.4% | 10.0% | 0.59% |
| Santa Clara | 27.4% | 27.2% | -0.23% |
| SOUTH BAY | 36.9% | 37.2% | 0.37% |
| Santa Cruz | 2.9% | 2.7% | -0.11% |
| Monterey | 3.8% | 3.9% | 0.05% |
| San Benito | 0.3% | 0.3% | 0.02% |
| COAST | 6.9% | 6.9% | -0.04% |
| REGIONAL TOTAL | 100.0% | 100.0% | 0.00% |

Source: Based on ES202 data for 1994-1st Quarter from the California Labor Market Information Division, Employment Development Department.

- What level of earnings are generated by the county and regional economies?
- How was payroll affected during the 1991-94 period, and how did payroll changes vary by county and subregion?

**Table 2**
**Economic Overview of the Bay Area Region and Recent Changes: Payroll**

| County/SUBREGION | Total Qtrly Payroll 1991 ($mil) | Total Qtrly Payroll 1991 Adj.* ($mil) | Total Qtrly Payroll 1994 ($mil) | Net Change Payroll 1991-94 | Percent Change Payroll 1991-94 |
|---|---|---|---|---|---|
| Alameda | 3,212 | 3,555 | 3,472 | (84) | -2.4% |

| | | | | | |
|---|---|---|---|---|---|
| Contra Costa | 1,721 | 1,905 | 1,934 | 30 | 1.5% |
| EAST BAY | 4,934 | 5,460 | 5,406 | (54) | -1.0% |
| Marin | 560 | 620 | 591 | (29) | -4.6% |
| Napa | 179 | 198 | 201 | 3 | 1.5% |
| Solano | 356 | 394 | 413 | 20 | 5.0% |
| Sonoma | 653 | 722 | 709 | (13) | -1.8% |
| NORTH BAY | 1,747 | 1,933 | 1,914 | (19) | -1.0% |
| San Francisco | 3,839 | 4,248 | 4,069 | (179) | -4.2% |
| SAN FRANCISCO | 3,839 | 4,248 | 4,069 | (179) | -4.2% |
| San Mateo | 1,835 | 2,031 | 2,282 | 251 | 12.4% |
| Santa Clara | 6,217 | 6,880 | 6,826 | (54) | -0.8% |
| SOUTH BAY | 8,052 | 8,911 | 9,108 | 197 | 2.2% |
| Santa Cruz | 405 | 449 | 411 | (38) | -8.4% |
| Monterey | 501 | 554 | 542 | (12) | -2.1% |
| San Benito | 33 | 36 | 36 | (0) | -0.7% |
| COAST | 939 | 1,039 | 989 | (50) | -4.8% |
| REGIONAL TOTAL | 19,510 | 21,591 | 21,485 | (106) | -0.5% |

Source: Based on ES202 data for the 1994-1st Quarter from the California Labor Market Information Division, Employment Development Department.

- What proportion of the region's payroll is located in the various counties and subregions?
- Have there been shifts in the pattern of earnings within the region?

**Table 2a**
**Economic Overview of the Bay Area Region and Recent Change:**
**Distribution of Payroll**

| County / SUBREGION | % Share of Regional Payroll 1991 | % Share of Regional Payroll 1994 | Net Change in Share of Payroll 1991-94 | Index*: Share of Payroll to Share of Jobs 1994 |
|---|---|---|---|---|
| Alameda | 16.5% | 16.2% | -0.31% | 90.7% |
| Contra Costa | 8.8% | 9.0% | 0.18% | 96.6% |
| EAST BAY | 25.3% | 25.2% | -0.13% | 92.7% |
| Marin | 2.9% | 2.8% | -0.12% | 84.4% |
| Napa | 0.9% | 0.9% | 0.02% | 69.2% |
| Solano | 1.8% | 1.9% | 0.10% | 69.7% |
| Sonoma | 3.3% | 3.3% | -0.05% | 70.3% |

| | | | | |
|---|---|---|---|---|
| NORTH BAY | 9.0% | 8.9% | -0.04% | 73.8% |
| San Francisco | 19.7% | 18.9% | -0.74% | 113.8% |
| SAN FRANCISCO | 19.7% | 18.9% | -0.74% | 113.8% |
| San Mateo | 9.4% | 10.6% | 1.22% | 106.0% |
| Santa Clara | 31.9% | 31.8% | -0.10% | 116.7% |
| SOUTH BAY | 41.3% | 42.4% | 1.12% | 113.8% |
| Santa Cruz | 2.1% | 1.9% | -0.17% | 69.7% |
| Monterey | 2.6% | 2.5% | -0.04% | 65.3% |
| San Benito | 0.2% | 0.2% | 0.00% | 56.7% |
| COAST | 4.8% | 4.6% | -0.21% | 66.7% |
| REGIONAL TOTAL | 100.0% | 100.0% | 0.00% | 100.0% |

Source: Based on ES202 data for 1994-1st Quarter from the California Labor Market Information Division, Employment Development Department.

* Index compares the county/subregion's share of payroll to its share of jobs. Values less than 100% mean that the area's jobs account for a disproportionately low share of regional earnings. On the other hand, values greater than 100% mean that the area's jobs are paid better as a whole.

- What is the breakdown of employment by the major economic sectors?

**Table 3**
**Employment by Sector for the 12-County Region, 1993**

| | East Bay | North Bay | San Francisco | South Bay | Coast | Bay Area REGION | STATE |
|---|---|---|---|---|---|---|---|
| **Agriculture** | **7,427** | **15,454** | **1,501** | **14,409** | **47,505** | **86,296** | **434,488** |
| | 1.1% | 4.8% | 0.3% | 1.5% | 23.3% | 3.3% | 4.2% |
| **Mining** | **3,180** | **1,570** | **1,696** | **861** | **526** | **7,833** | **33,351** |
| | 0.4% | 0.5% | 0.4% | 0.1% | 0.3% | 0.3% | 0.3% |
| **Construction** | **40,441** | **20,067** | **11,017** | **36,715** | **6,991** | **115,231** | **441,697** |
| | 5.7% | 6.3% | 2.5% | 3.8% | 3.4% | 4.4% | 4.3% |
| **Manufacturing** | **102,237** | **38,769** | **37,056** | **263,175** | **23,012** | **464,249** | **1,793,222** |
| | 14.5% | 12.1% | 8.4% | 27.1% | 11.3% | 17.6% | 17.4% |
| **Transp/Comm/ Utilities** | **55,224** | **13,951** | **37,002** | **58,656** | **8,673** | **173,506** | **590,116** |
| | 7.8% | 4.4% | 8.4% | 6.0% | 4.3% | 6.6% | 5.7% |
| **Wholesale Trade** | **49,916** | **15,871** | **22,393** | **64,817** | **10,151** | **163,148** | **680,459** |
| | 7.1% | 5.0% | 5.1% | 6.7% | 5.0% | 6.2% | 6.6% |
| **Retail Trade** | **153,206** | **84,360** | **71,126** | **164,078** | **43,919** | **516,689** | **2,114,234** |
| | 21.7% | 26.4% | 16.1% | 16.9% | 21.6% | 19.5% | 20.5% |
| **Finance/ Insur/ Real Estate** | **58,655** | **26,034** | **67,833** | **53,788** | **10,408** | **216,718** | **795,617** |
| | 8.3% | 8.2% | 15.3% | 5.5% | 5.1% | 8.2% | 7.7% |
| **Services** | **234,315** | **102,816** | **193,010** | **313,992** | **52,128** | **896,261** | **3,380,653** |
| | 33.1% | 32.2% | 43.6% | 32.3% | 25.6% | 33.9% | 32.8% |
| **Not Classified** | **2,296** | **519** | **0** | **2,068** | **250** | **5,133** | **37,843** |
| | 0.3% | 0.2% | 0.0% | 0.2% | 0.1% | 0.2% | 0.4% |
| **TOTAL** | **706,900** | **319,413** | **442,634** | **972,559** | **203,561** | **2,645,067** | **10,301,680** |
| | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1993.

- Did the sectors expand or contract during a recent time period?

**Table 4**
**Change in Sectoral Employment, 1991-93**

| | East Bay | North Bay | San Francisco | South Bay | Coast | Bay Area REGION | STATE |
|---|---|---|---|---|---|---|---|
| **Agriculture** | -2.8% | 1.7% | 10.0% | 1.8% | 4.1% | 2.7% | 2.0% |
| **Mining** | 1.3% | 10.6% | 4.0% | 22.1% | 11.2% | 6.3% | -13.9% |
| **Construction** | -10.2% | -16.5% | -20.0% | -15.9% | -24.3% | -15.1% | -19.1% |
| **Manufacturing** | -7.2% | 1.1% | -3.1% | -7.9% | -4.7% | -6.6% | -10.9% |
| **Trans/Com/Util** | -0.7% | 0.9% | 0.3% | -1.1% | 0.7% | -0.4% | -1.6% |
| **Wholesale Trade** | -5.0% | 1.1% | -10.0% | -15.3% | -0.2% | -9.3% | -7.5% |
| **Retail Trade** | -2.4% | 1.7% | -6.2% | -3.8% | -2.8% | -2.8% | -2.7% |
| **Fin/Insur/Real** | 1.4% | 4.5% | -7.5% | -2.8% | 3.8% | -2.1% | -3.1% |
| **Services** | 4.2% | 3.4% | 0.3% | 5.6% | 0.5% | 3.5% | 1.3% |
| **Not Classified** | 55.8% | 40.7% | --- | 1.9% | -22.1% | 22.4% | -23.6% |
| **TOTAL** | -1.2% | 1.0% | -7.5% | -1.3% | -1.0% | -2.1% | -4.1% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993.

- Which industries provide the most jobs in the region?

**Table 5**
**Industries* with the Largest Employment, 12-County Bay Area Region, 1993**

| SIC | Description | Regional Emp. 1993 |
|---|---|---|
| 806 | Hospitals | 67,742 |
| 367 | Electronic components and accessories | 67,435 |
| 737 | Computer and data processing services | 60,656 |
| 736 | Personnel supply services | 60,304 |
| 738 | Miscellaneous business services | 53,953 |
| 357 | Computer and office equipment | 52,722 |
| 602 | Commercial banks | 51,352 |
| 701 | Hotels and motels | 46,508 |
| 801 | Offices & clinics of medical doctors | 46,427 |
| 811 | Legal service | 36,189 |
| 873 | Research and testing services | 35,530 |
| 871 | Engineering & architectural services | 33,618 |
| 421 | Trucking & courier services, ex. air | 33,255 |
| 481 | Telephone communication | 32,929 |
| 451 | Air transportation, scheduled | 32,378 |
| 382 | Measuring and controlling devices | 32,262 |
| 504 | Prof. & commercial equipment-wholesale | 31,795 |
| 874 | Management and public relations | 31,524 |
| 653 | Real estate agents and managers | 26,298 |
| 734 | Services to buildings | 26,197 |
| 799 | Misc. amusement, recreation services | 25,076 |
| 805 | Nursing and personal care facilities | 24,755 |
| 822 | Colleges and universities | 23,559 |
| 802 | Offices and clinics of dentists | 22,531 |
| 506 | Electrical goods-wholesale | 21,729 |
| | All Industries | 2,645,067 |

Source: Based on ES202 data from the Minessota Implan Group, Inc., 1993

* Excludes industries in the nondurable goods wholesale and retail trade sectors.

Highlighted industries are related to the Environmental or Multimedia Cluster

- Which industries gained the largest number of jobs during a recent period?

**Table 6**
**Industries* with the Largest Gains in Employment, 12-County Bay Area Region, 1991-93**
**(1993 regional employment of 200+ employees)**

| SIC | Description | Net Increase in Emp. 1991-93 | % Increase in Emp. 1991-93 | Regional Emp. 1993 |
|---|---|---|---|---|
| 737 | Computer and data processing services | 13,510 | 28.7% | 60,656 |
| 738 | Miscellaneous business services | 5,353 | 11.0% | 53,953 |
| 736 | Personnel supply services | 4,709 | 8.5% | 60,304 |
| 366 | Communications equipment | 4,101 | 28.5% | 18,499 |
| 616 | Mortgage bankers and brokers | 4,079 | 64.7% | 10,383 |
| 874 | Management and public relations | 3,970 | 14.4% | 31,524 |
| 799 | Misc. amusement, recreation services | 2,677 | 12.0% | 25,076 |
| 673 | Trusts | 2,475 | 117.7% | 4,578 |
| 873 | Research and testing services | 2,442 | 7.4% | 35,530 |
| 836 | Residential care | 1,549 | 11.0% | 15,589 |
| 384 | Medical instruments and supplies | 1,396 | 14.0% | 11,360 |
| 839 | Social services, nec | 1,388 | 22.7% | 7,494 |
| 489 | Communication services, nec | 1,356 | 214.2% | 1,989 |
| 208 | Beverages | 1,250 | 11.9% | 11,712 |
| 636 | Title insurance | 1,203 | 27.8% | 5,536 |
| 371 | Motor vehicles and equipment | 1,178 | 21.5% | 6,647 |
| 473 | Freight transportation arrangement | 1,138 | 17.0% | 7,829 |
| 805 | Nursing and personal care facilities | 1,056 | 4.5% | 24,755 |
| 283 | Drugs | 954 | 9.9% | 10,600 |
| 628 | Security and commodity services | 922 | 35.2% | 3,538 |
| 076 | Farm labor and management services | 885 | 8.5% | 11,275 |
| 272 | Periodicals | 866 | 26.8% | 4,096 |
| 355 | Special industry machinery | 853 | 16.8% | 5,934 |
| 323 | Products of purchased glass | 738 | 88.7% | 1,570 |

| | |
|---|---|
| Average All Industries | -2.1% |

Source: Based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

* Excludes industries in the nondurable goods wholesale and retail trade sectors.

Highlighted industries are related to the Environmental or Multimedia Cluster

- Which industries lost a large number of jobs in a recent period?

**Table 7**
**Industries* with the Largest Declines in Employment, 12-County Bay Area Region, 1991-93**
**(1993 regional employment of 200+ employees)**

| SIC | Description | Net Loss in Emp. 1991-93 | % Loss in Emp. 1991-93 | Regional Emp. 1993 |
|---|---|---|---|---|
| 357 | Computer and office equipment | (6,958) | -11.7% | 52,722 |
| 367 | Electronic components and accessories | (6,706) | -9.0% | 67,435 |
| 376 | Guided missiles, space vehicles, parts | (6,688) | -28.5% | 16,778 |
| 382 | Measuring and controlling devices | (5,294) | -14.1% | 32,262 |
| 602 | Commercial banks | (4,963) | -8.8% | 51,352 |
| 504 | Prof. & commercial equipment-wholesale | (3,957) | -11.1% | 31,795 |
| 506 | Electrical goods-wholesale | (3,501) | -13.9% | 21,729 |
| 671 | Holding offices | (3,094) | -77.9% | 877 |
| 291 | Petroleum refining | (2,715) | -22.4% | 9,390 |
| 822 | Colleges and universities | (2,603) | -9.9% | 23,559 |
| 701 | Hotels and motels | (2,463) | -5.0% | 46,508 |
| 481 | Telephone communications | (2,438) | -6.9% | 32,929 |
| 508 | Machinery, equip., and supplies-wholesale | (2,416) | -16.3% | 12,381 |
| 641 | Insurance agents, brokers, and service | (2,010) | -9.4% | 19,291 |
| 871 | Engineering & architectural services | (1,871) | -5.3% | 33,618 |
| 734 | Services to buildings | (1,760) | -6.3% | 26,197 |
| 361 | Electric distribution equipment | (1,593) | -41.4% | 2,256 |
| 655 | Subdividers and developers | (1,478) | -29.5% | 3,537 |
| 275 | Commercial printing | (1,390) | -8.2% | 15,481 |
| 811 | Legal service | (1,348) | -3.6% | 36,189 |
| 603 | Savings institutions | (1,277) | -9.6% | 12,055 |
| 633 | Fire, marine, and casualty insurance | (1,037) | -4.7% | 20,941 |
| 379 | Miscellaneous transportation equipment | (1,036) | -28.0% | 2,666 |
| 203 | Preserved fruits and vegetables | (974) | -7.7% | 11,689 |
| 356 | General industrial machinery | (928) | -24.4% | 2,882 |

| | |
|---|---|
| Average All Industries | -2.1% |

Source: Based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

* Excludes industries in the construction, wholesale (nondurable goods), and retail trade sectors.

Highlighted industries are related to the Environmental or Multimedia Cluster

- Which industries are the top payroll generators in the region?

**Table 8**
**Industries* with the Largest Payroll, 12-County Bay Area Region, 1993**

| SIC | Description | Regional Payroll 1993 |
|---|---|---|
| 737 | Computer and data processing services | 3,635,507,763 |
| 367 | Electronic components and accessories | 3,369,185,534 |
| 357 | Computer and office equipment | 3,281,915,501 |
| 806 | Hospitals | 2,459,056,280 |
| 801 | Offices & clinics of medical doctors | 2,390,488,172 |
| 811 | Legal service | 1,876,684,205 |
| 602 | Commercial banks | 1,829,472,368 |
| 382 | Measuring and controlling devices | 1,802,697,277 |
| 873 | Research and testing services | 1,764,854,607 |
| 871 | Engineering & architectural services | 1,708,679,167 |
| 504 | Prof. & commercial equipment-wholesale | 1,573,432,565 |
| 874 | Management and public relations | 1,544,085,863 |
| 481 | Telephone communication | 1,537,434,615 |
| 451 | Air transportation, scheduled | 1,401,756,855 |
| 621 | Security brokers and dealers | 1,224,498,087 |
| 736 | Personnel supply services | 1,179,455,737 |
| 738 | Miscellaneous business services | 1,150,131,722 |
| 506 | Electrical goods-wholesale | 1,044,727,023 |
| 366 | Communications equipment | 1,015,293,694 |
| 493 | Combination utility services | 997,991,510 |
| 421 | Trucking & courier services, ex. air | 985,618,578 |
| 376 | Guided missiles, space vehicles, parts | 953,759,746 |
| 633 | Fire, marine, and casualty insurance | 887,368,946 |
| 701 | Hotels and motels | 838,407,045 |
| 653 | Real estate agents and managers | 796,541,754 |
| | All Industries | $86,448,706,400 |

Source: Based on ES202 data from the Minnesota Implan Group, Inc., 1993

* Excludes industries in the nondurable goods wholesale and retail trade sectors.

Highlighted industries are related to the Environmental or Multimedia Cluster

- Which industries experienced major payroll gains during a recent period?

**Table 9**
**Industries* with the Largest Gains in Payroll, 12-County Bay Area Region, 1991-93**
**(1993 regional payroll > $5 million)**

| SIC | Description | Increase in Regional Pay 1991-93** | Regional Payroll 1993 |
|---|---|---|---|
| 489 | Communication services, nec | 279.0% | 94,189,091 |
| 611 | Federal & Fed.-sponsored credit | 237.4% | 21,738,566 |
| 823 | Libraries | 185.1% | 8,953,547 |
| 252 | Office furniture | 178.5% | 57,340,973 |
| 461 | Pipelines, except natural gas | 145.9% | 15,026,224 |
| 323 | Products of purchased glass | 143.2% | 57,125,320 |
| 236 | Girls' and children's outerwear | 127.7% | 12,114,155 |
| 673 | Trusts | 125.9% | 147,281,083 |
| 622 | Commodity contracts brokers, dealers | 100.3% | 6,974,987 |
| 608 | Foreign bank & branches + agencies | 98.4% | 50,261,225 |
| 515 | Farm-product raw materials | 95.6% | 14,898,726 |
| 132 | Natural gas liquids | 88.2% | 16,911,086 |
| 178 | Water well drilling | 76.1% | 23,075,302 |
| 448 | Water transportation of passengers | 70.7% | 20,952,310 |
| 616 | Mortgage bankers and brokers | 70.4% | 475,950,251 |
| 415 | School buses | 65.3% | 28,839,549 |
| 263 | Paperboard mills | 65.0% | 12,378,541 |
| 635 | Surety insurance | 61.4% | 16,878,619 |
| 104 | Gold and silver ores | 60.0% | 12,404,710 |
| 609 | Functions closely related to banking | 58.8% | 131,201,019 |
| 564 | Children's and infants' wear stores | 51.6% | 16,534,334 |
| 737 | Computer and data processing services | 47.7% | 3,635,507,763 |
| 803 | Offices of osteopathic physicians | 47.5% | 6,896,464 |
| 628 | Security and commodity services | 46.5% | 344,634,870 |
| 131 | Crude petroleum and natural gas | 46.1% | 334,113,597 |
| 781 | Motion picture production & services | 41.3% | 127,297,080 |
| | Average All Industries | 0.8% | |

Source: Based on ES202 data from Minnesota Implan Group, Inc., 1991, 1993

* Excludes industries in the nondurable goods wholesale and retail trade sectors.

** Values adjusted for inflation.

Highlighted industries are related to the Environmental or Multimedia Cluster

- In which industries did major payroll losses occur?

**Table 10**
**Industries* with the Largest Declines in Payroll, 12-County Bay Area Region, 1991-93**
**(1993 regional payroll > $5 million)**

| SIC | Description | Decline in Regional Pay 1991-93** | Regional Payroll 1993 |
|---|---|---|---|
| 671 | Holding offices | -68.9% | 64,393,824 |
| 413 | Intercity and rural bus transportation | -65.9% | 6,608,178 |
| 148 | Nonmetallic minerals services | -59.6% | 5,145,121 |
| 478 | Miscellaneous transportation services | -47.0% | 17,979,487 |
| 373 | Ship and boat building and repairing | -41.9% | 43,429,233 |
| 482 | Telegraph & other communications | -38.0% | 23,528,383 |
| 361 | Electric distribution equipment | -35.8% | 109,304,949 |
| 325 | Structural clay products | -35.7% | 10,144,876 |
| 339 | Miscellaneous primary metal products | -35.4% | 5,840,542 |
| 362 | Electrical industrial apparatus | -34.6% | 32,553,018 |
| 289 | Miscellaneous chemical products | -34.2% | 56,921,800 |
| 655 | Subdividers and developers | -33.9% | 143,292,623 |
| 109 | Miscellaneous metal ores | -30.1% | 8,760,253 |
| 243 | Millwork, plywood & structural members | -29.4% | 56,091,530 |
| 305 | Hose & belting & gaskets & packing | -27.2% | 10,219,231 |
| 376 | Guided missiles, space vehicles, parts | -27.0% | 953,759,746 |
| 343 | Plumbing and heating, except electric | -25.8% | 8,578,451 |
| 386 | Photographic equipment and supplies | -25.4% | 58,953,533 |
| 336 | Nonferrous foundries (castings) | -24.5% | 24,654,121 |
| 267 | Misc. converted paper products | -24.0% | 65,661,721 |
| 372 | Aircraft and parts | -23.8% | 56,135,760 |
| 494 | Water supply | -22.4% | 33,808,101 |
| 379 | Miscellaneous transportation equipment | -22.2% | 129,185,953 |
| 422 | Public warehousing and storage | -22.0% | 75,621,154 |
| 138 | Oil and gas field services | -21.8% | 36,926,799 |
| | Average All Industries | 0.8% | |

Source: Based on ES202 data from Minnesota Implan Group, Inc., 1991, 1993

* Excludes industries in the construction and retail trade sectors.

** Values adjusted for inflation.

Highlighted industries are related to the Environmental or Multimedia Cluster

- Does the Bay Area economy "specialize" in certain industries? Which ones? (where specialization is identified with higher relative concentration)

**Table 11**
**Industries with the Highest Levels of Concentration in the Bay Area Region, 1993**
**(1993 regional employment of 200+ employees)**

| SIC | Description | Location Quotient* | Employment 1993 |
|---|---|---|---|
| 357 | Computer and office equipment | 4.97 | 52,722 |
| 376 | Guided missiles, space vehicles, parts | 4.72 | 16,778 |
| 367 | Electronic components and accessories | 4.41 | 67,435 |
| 489 | Communication services, nec | 3.95 | 1,989 |
| 382 | Measuring and controlling devices | 3.93 | 32,262 |
| 673 | Trusts | 3.82 | 4,578 |
| 132 | Natural gas liquids | 3.66 | 537 |
| 072 | Crop services | 3.48 | 10,670 |
| 108 | Metal mining services | 3.17 | 312 |
| 493 | Combination utility services | 3.05 | 16,729 |
| 441 | Deep sea foreign trans. of freight | 2.97 | 1,599 |
| 291 | Petroleum refining | 2.88 | 9,390 |
| 141 | Dimension stone | 2.77 | 293 |
| 076 | Farm labor and management services | 2.67 | 11,275 |
| 366 | Communications equipment | 2.66 | 18,499 |
| 636 | Title insurance | 2.58 | 5,536 |
| 737 | Computer and data processing services | 2.34 | 60,656 |
| 208 | Beverages | 2.26 | 11,712 |
| 601 | Central reserve depository | 2.22 | 1,700 |
| 679 | Miscellaneous investing | 2.21 | 2,243 |
| 623 | Security and commodity exchanges | 2.14 | 470 |
| 873 | Research and testing services | 2.12 | 35,530 |
| 482 | Telegraph & other communications | 2.03 | 423 |
| 379 | Miscellaneous transportation equipment | 1.99 | 2,666 |

| | | | |
|---|---|---|---|
| 473 | Freight transportation arrangement | 1.93 | 7,829 |
| 451 | Air transportation, scheduled | 1.87 | 32,378 |
| 829 | Schools & educational services, nec | 1.86 | 6,222 |
| 495 | Sanitary services | 1.84 | 7,195 |
| 369 | Misc. electrical equipment & supplies | 1.71 | 7,475 |

Source: ADE based on ES202 data from the Minnesota Implan Group, Inc., 1993

* The location quotient is used to indicate relative concentration of employment. Industry employment as a share of total employment in the region is compared against industry employment as a share of total employment in the U.S. as a whole. A value greater than "1.00" means that regional employment in that industry is relatively greater (or more highly concentrated) than we would expect based on a national norm.

Highlighted industries are related to the Environmental or Multimedia Cluster

- Which industries became more even more concentrated in the Bay Area during a recent period?

**Table 12**
**Industries with the Largest Increases in Concentration, 1991-93**
**(Industries with Location Quotients* > 1.00 in 1993)**

| SIC | Description | Change in Location Quotient 1991-93 | Location Quotient 1993 | Location Quotient 1991 |
|---|---|---|---|---|
| 489 | Communication services, nec | +3.07 | 3.95 | 0.89 |
| 108 | Metal mining services | +2.11 | 3.17 | 1.06 |
| 673 | Trusts | +1.98 | 3.82 | 1.84 |
| 132 | Natural gas liquids | +1.09 | 3.66 | 2.57 |
| 141 | Dimension stone | +0.92 | 2.77 | 1.85 |
| 366 | Communications equipment | +0.75 | 2.66 | 1.91 |
| 672 | Investment offices | +0.69 | 1.48 | 0.80 |
| 178 | Water well drilling | +0.56 | 1.24 | 0.68 |
| 448 | Water transportation of passengers | +0.42 | 1.05 | 0.63 |
| 208 | Beverages | +0.38 | 2.26 | 1.88 |
| 737 | Computer and data processing services | +0.37 | 2.34 | 1.96 |
| 609 | Functions closely related to banking | +0.35 | 1.51 | 1.16 |
| 381 | Search and navigation equipment | +0.32 | 1.58 | 1.25 |
| 791 | Dance studios, schools, and halls | +0.31 | 1.06 | 0.76 |
| 628 | Security and commodity services | +0.31 | 1.36 | 1.05 |
| 272 | Periodicals | +0.27 | 1.12 | 0.85 |
| 473 | Freight transportation arrangement | +0.27 | 1.93 | 1.67 |
| 615 | Business credit institutions | +0.26 | 1.67 | 1.41 |

| | | | | |
|---|---|---|---|---|
| 355 | Special industry machinery | +0.26 | 1.38 | 1.12 |
| 623 | Security and commodity exchanges | +0.24 | 2.14 | 1.91 |
| 357 | Computer and office equipment | +0.21 | 4.97 | 4.76 |
| 564 | Children's and infants' wear stores | +0.20 | 1.19 | 0.99 |
| 369 | Misc. electrical equipment & supplies | +0.20 | 1.71 | 1.51 |
| 616 | Mortgage bankers and brokers | +0.19 | 1.57 | 1.37 |
| 384 | Medical instruments and supplies | +0.18 | 1.45 | 1.27 |

Source: ADE based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

* The location quotient is used to indicate relative concentration of employment. Industry employment as a share of total employment in the region is compared against industry employment as a share of total employment in the U.S. as a whole. A value greater than "1.00" means that regional employment in that industry is relatively greater ( or more highly concentrated) than would expect based on a national norm.

Highlighted industres are related to the Environmental or Multimedia Cluster

- Among industries that expanded in employment during 1991-93, which of them experienced relatively higher growth at the subregional level than at the regional level?

**Table 13**
**Industries* in which Subregional Growth Exceeded Regional Growth, 1991-94**

| | | Subregion** | | | | Region | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SIC | Description | Employ 1991 | Employ 1993 | Net Change | Percent Change | Employ 1991 | Employ 1993 | Net Change | Percent Change | Competitive Shift*** |
| **East Bay** | | | | | | | | | | |
| 458 | Airports, Flying Fields & Svc | 471 | 880 | 409 | 86.8% | 2591 | 2868 | 277 | 10.7% | 76.1% |
| 283 | Drugs | 1497 | 2255 | 758 | 50.6% | 9646 | 10600 | 954 | 9.9% | 40.7% |
| 679 | Miscellaneous Investing | 691 | 1019 | 328 | 47.5% | 2090 | 2243 | 153 | 7.3% | 40.1% |
| 355 | Special Industry Machinery | 1472 | 2009 | 537 | 36.5% | 5081 | 5934 | 853 | 16.8% | 19.7% |
| 281 | Industrial Inorganic Chemicals | 1880 | 2246 | 366 | 19.5% | 2615 | 2624 | 9 | 0.3% | 19.1% |
| **North Bay** | | | | | | | | | | |
| 323 | Products of Purchased Glass | 181 | 1066 | 885 | 489.0% | 832 | 1570 | 738 | 88.7% | 400.2% |
| 347 | Metal Services, nec | 59 | 152 | 93 | 157.6% | 3199 | 3401 | 202 | 6.3% | 151.3% |
| 781 | Motion Picture Production | 296 | 693 | 397 | 134.1% | 2232 | 2640 | 408 | 18.3% | 115.8% |
| 384 | Medical Instruments & Supp. | 237 | 425 | 188 | 79.3% | 9964 | 11360 | 1396 | 14.0% | 65.3% |
| 283 | Drugs | 196 | 299 | 103 | 52.6% | 9646 | 10600 | 954 | 9.9% | 42.7% |
| **San Francisco** | | | | | | | | | | |
| 366 | Communications Equipment | 36 | 237 | 201 | 558.3% | 14398 | 18499 | 4101 | 28.5% | 529.9% |
| 632 | Medical Svc & Health Insur. | 1426 | 2320 | 894 | 62.7% | 3295 | 3939 | 644 | 19.5% | 43.1% |
| 131 | Crude Petrol. & Natural Gas | 770 | 1196 | 426 | 55.3% | 3451 | 3935 | 484 | 14.0% | 41.3% |
| 238 | Misc. Apparel & Accessories | 455 | 531 | 76 | 16.7% | 1043 | 1155 | 112 | 10.7% | 6.0% |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 809 | Health & Allied Services, nec | 1148 | 1288 | 140 | 12.2% | 6406 | 6815 | 409 | 6.4% | 5.8% |
| **South Bay** | | | | | | | | | | |
| 236 | Girls' & Childrens' Outerwear | 32 | 320 | 288 | 900.0% | 250 | 513 | 263 | 105.2% | 794.8% |
| 346 | Metal Forgings & Stampings | 1049 | 1281 | 232 | 22.1% | 2409 | 2409 | 0 | 0.0% | 22.1% |
| 737 | Computer & Data Processing | 24699 | 35267 | 10568 | 42.8% | 47146 | 60656 | 13510 | 28.7% | 14.1% |
| 733 | Mailing, Reproduction, Steno | 2867 | 3218 | 351 | 12.2% | 9029 | 9219 | 190 | 2.1% | 10.1% |
| 369 | Misc. Electrical Eqpt & Supp. | 4336 | 4875 | 539 | 12.4% | 7177 | 7475 | 298 | 4.2% | 8.3% |
| **Coast** | | | | | | | | | | |
| 202 | Dairy Products | 36 | 273 | 237 | 658.3% | 1867 | 2031 | 164 | 8.8% | 649.5% |
| 371 | Motor Vehicles & Equipment | 59 | 263 | 204 | 345.8% | 5469 | 6647 | 1178 | 21.5% | 324.2% |
| 473 | Freight Transp. Arrangement | 103 | 299 | 196 | 190.3% | 6691 | 7829 | 1138 | 17.0% | 173.3% |
| 209 | Misc. Food & Kindred Prod. | 661 | 1224 | 563 | 85.2% | 5757 | 5791 | 34 | 0.6% | 84.6% |
| 615 | Business Credit Institutions | 1385 | 1993 | 608 | 43.9% | 3547 | 3972 | 425 | 12.0% | 31.9% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

* Industries listed are noteworthy examples based on the magnitude of change and/or contrast between subregional and regional performance.

** Subregions: East Bay=Alameda and Contra Costa; North Bay=Marin, Napa, Solano, and Sonoma; San Francisco; South Bay=San Mateo and Santa Clara; Coast=Santa Cruz, Monterey, and San Benito.

*** Competitive shift is the difference between industry change at the subregional and regional levels. A positive shift value means that growth in the subregion exceeded growth in the region.

- Which industries grew in the subregion, while declining in the region overall?

**Table 14**
**Industries* in which Employment Grew in the Subregion, but Declined in the Region, 1991 - 1993**

| | | Subregion** | | | | Region | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SIC** | **Description** | **Employ 1991** | **Employ 1993** | **Net Change** | **Percent Change** | **Employ 1991** | **Employ 1993** | **Net Change** | **Percent Change** | **Competitive Shift*** ** |
| **East Bay** | | | | | | | | | | |
| 807 | Medical & Dental Labs | 1269 | 1806 | 537 | 42.3% | 5789 | 5621 | -168 | -2.9% | 45.2% |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 357 | Computer & Office Equip. | 3404 | 4361 | 957 | 28.1% | 59680 | 52722 | -6958 | -11.7% | 39.8% |
| 451 | Air Transportation, Sched. | 3415 | 4153 | 738 | 21.6% | 32851 | 32378 | -473 | -1.4% | 23.1% |
| 794 | Commercial Sports | 863 | 1010 | 147 | 17.0% | 2671 | 2600 | -71 | -2.7% | 19.7% |
| 359 | Industrial Machinery, nec | 1730 | 2013 | 283 | 16.4% | 8800 | 8677 | -123 | -1.4% | 17.8% |
| **North Bay** | | | | | | | | | | |
| 637 | Pension, Health Funds | 63 | 147 | 84 | 133.3% | 1712 | 1405 | -307 | -17.9% | 151.3% |
| 361 | Electric Distrib. Equipment | 56 | 100 | 44 | 78.6% | 3849 | 2256 | -1593 | -41.4% | 120.0% |
| 072 | Crop Services | 174 | 286 | 112 | 64.4% | 11454 | 10670 | -784 | -6.8% | 71.2% |
| 356 | General Industrial Machinery | 552 | 699 | 147 | 26.6% | 3810 | 2882 | -928 | -24.4% | 51.0% |
| 357 | Computer & Office Equip. | 449 | 618 | 169 | 37.6% | 59680 | 52722 | -6958 | -11.7% | 49.3% |
| **San Francisco** | | | | | | | | | | |
| 357 | Computer & Office Equip. | 179 | 359 | 180 | 100.6% | 59680 | 52722 | -6958 | -11.7% | 112.2% |
| 203 | Preserved Fruits & Veg. | 662 | 1106 | 444 | 67.1% | 12663 | 11689 | -974 | -7.7% | 74.8% |
| 637 | Pension, Health Funds | 289 | 382 | 93 | 32.2% | 1712 | 1405 | -307 | -17.9% | 50.1% |
| 621 | Security Brokers | 7173 | 7967 | 794 | 11.1% | 12651 | 12022 | -629 | -5.0% | 16.0% |
| 734 | Services to Buildings | 6125 | 6430 | 305 | 5.0% | 27957 | 26197 | -1760 | -6.3% | 11.3% |
| **South Bay** | | | | | | | | | | |
| 385 | Ophthalmic Goods | 110 | 287 | 177 | 160.9% | 1179 | 1096 | -83 | -7.0% | 167.9% |
| 206 | Sugar & Confectionary Prod. | 485 | 871 | 386 | 79.6% | 4450 | 4143 | -307 | -6.9% | 86.5% |
| 322 | Glass & Glassware | 297 | 501 | 204 | 68.7% | 2081 | 1860 | -221 | -10.6% | 79.3% |
| 286 | Industrial Organic Chemicals | 734 | 925 | 191 | 26.0% | 2602 | 2370 | -232 | -8.9% | 34.9% |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 329 | Misc. Nonmetallic Products | 410 | 473 | 63 | 15.4% | 1040 | 948 | -92 | -8.8% | 24.2% |
| **Coast** | | | | | | | | | | |
| 382 | Measur. & Control Devices | 243 | 432 | 189 | 77.8% | 37556 | 32262 | -5294 | -14.1% | 91.9% |
| 732 | Credit Reporting Agencies | 156 | 209 | 53 | 34.0% | 3446 | 2930 | -516 | -15.0% | 48.9% |
| 621 | Security Brokers | 244 | 341 | 97 | 39.8% | 12651 | 12022 | -629 | -5.0% | 44.7% |
| 308 | Misc. Plastics Products, nec | 207 | 290 | 83 | 40.1% | 7501 | 7483 | -18 | -0.2% | 40.3% |
| 421 | Trucking & Courier Services | 2259 | 2422 | 163 | 7.2% | 33283 | 33255 | -28 | -0.1% | 7.3% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

* Industries listed are noteworthy examples based on the magnitude of change and/or contrast between subregional and regional performance.

** Subregions: East Bay=Alameda and Contra Costa; North Bay=Marin, Napa, Solano, and Sonoma; San Francisco; South Bay=San Mateo and Santa Clara; Coast=Santa Cruz, Monterey, and San Benito.

*** Competitive shift is the difference between industry change at the subregional and regional levels. A positive shift value means that growth in the subregion exceeded growth in the region.

- Which industries declined at the subregional level, while employment increased in the region as a whole?

**Table 15**
**Industries* in which Employment Declined in the Subregion, but Grew in the Region, 1991-1993**

| | | **Subregion**** | | | | **Region** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SIC** | **Description** | **Employ 1991** | **Employ 1993** | **Net Change** | **Percent Change** | **Employ 1991** | **Employ 1993** | **Net Change** | **Percent Change** | **Competitive Shift***** |
| **East Bay** | | | | | | | | | | |
| 365 | Household Audio/Video Eqpt | 364 | 258 | -106 | -29.1% | 1573 | 1656 | 83 | 5.3% | -34.4% |
| 395 | Pens, Pencils, Art Supplies | 414 | 346 | -68 | -16.4% | 619 | 640 | 21 | 3.4% | -19.8% |
| 347 | Metal Services, nec | 1128 | 1093 | -35 | -3.1% | 3199 | 3401 | 202 | 6.3% | -9.4% |
| 731 | Advertising | 1159 | 1053 | -106 | -9.1% | 7362 | 7378 | 16 | 0.2% | -9.4% |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 369 | Misc. Electrical Equipment | 2548 | 2464 | -84 | -3.3% | 7177 | 7475 | 298 | 4.2% | -7.4% |
| **North Bay** | | | | | | | | | | |
| 369 | Misc. Electrical Equipment | 218 | 43 | -175 | -80.3% | 7177 | 7475 | 298 | 4.2% | -84.4% |
| 076 | Farm Labor & Mgt Services | 1688 | 1432 | -256 | -15.2% | 10390 | 11275 | 885 | 8.5% | -23.7% |
| 202 | Dairy Products | 485 | 458 | -27 | -5.6% | 1867 | 2031 | 164 | 8.8% | -14.4% |
| 809 | Health & Allied Services, nec | 1044 | 990 | -54 | -5.2% | 6406 | 6815 | 409 | 6.4% | -11.6% |
| 205 | Bakery Products | 515 | 465 | -50 | -9.7% | 6445 | 6527 | 82 | 1.3% | -11.0% |
| **San Francisco** | | | | | | | | | | |
| 737 | Computer & Data Process. | 7220 | 6970 | -250 | -3.5% | 47146 | 60656 | 13510 | 28.7% | -32.1% |
| 458 | Airports, Flying Field & Svc. | 706 | 608 | -98 | -13.9% | 2591 | 2868 | 277 | 10.7% | -24.6% |
| 679 | Misc. Investing | 575 | 503 | -72 | -12.5% | 2090 | 2243 | 153 | 7.3% | -19.8% |
| 209 | Misc. Food & Kindred Prod. | 1511 | 1282 | -229 | -15.2% | 5757 | 5791 | 34 | 0.6% | -15.7% |
| 733 | Mailing, Reproduction, Steno | 3694 | 3443 | -251 | -6.8% | 9029 | 9219 | 190 | 2.1% | -8.9% |
| **South Bay** | | | | | | | | | | |
| 323 | Products of Purchased Glass | 361 | 169 | -192 | -53.2% | 832 | 1570 | 738 | 88.7% | -141.9% |
| 632 | Medical Svc & Health Insur. | 1230 | 937 | -293 | -23.8% | 3295 | 3939 | 644 | 19.5% | -43.4% |
| 615 | Business Credit Institutions | 1474 | 1114 | -360 | -24.4% | 3547 | 3972 | 425 | 12.0% | -36.4% |
| 209 | Misc. Food & Kindred Prod. | 320 | 227 | -93 | -29.1% | 5757 | 5791 | 34 | 0.6% | -29.7% |
| 205 | Bakery Products | 1551 | 1399 | -152 | -9.8% | 6445 | 6527 | 82 | 1.3% | -11.1% |
| **Coast** | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 355 | Special Industry Machinery | 151 | 115 | -36 | -23.8% | 5081 | 5934 | 853 | 16.8% | -40.6% |
| 384 | Medical Instruments | 127 | 101 | -26 | -20.5% | 9964 | 11360 | 1396 | 14.0% | -34.5% |
| 736 | Personnel Supply Services | 1661 | 1551 | -110 | -6.6% | 55595 | 60304 | 4709 | 8.5% | -15.1% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

* Industries listed are noteworthy examples based on the magnitude of change and/or contrast between subregional and regional performance.

** Subregions: East Bay=Alameda and Contra Costa; North Bay=Marin, Napa, Solano, and Sonoma; San Francisco; South Bay=San Mateo and Santa Clara; Coast=Santa Cruz, Monterey, and San Benito.

*** Competitive shift is the difference between industry change at the subregional and regional levels. A negative shift value means that change in the subregion lagged behind change in the region.

- How is employment within the Environmental Cluster distributed across the counties?

**Table 16**
**Spatial Distribution of the Environmental Cluster, Bay Area Region, 1991, 1993**

| Region | Cluster Employment 1991 | Cluster Employment 1993 | Net Change Employment 1991-93 | % Change Employment 1991-93 |
|---|---|---|---|---|
| Alameda | 2,742 | 2,442 | (300) | -10.9% |
| Contra Costa | 1,236 | 1,121 | (115) | -9.3% |
| EAST BAY | 3,979 | 3,564 | (415) | -10.4% |
| Marin | 266 | 217 | (48) | -18.2% |
| Napa | 70 | 38 | (32) | -45.4% |
| Solano | 152 | 226 | 73 | 48.2% |
| Sonoma | 350 | 307 | (42) | -12.1% |
| NORTH BAY | 837 | 789 | (49) | -5.8% |
| San Francisco | 1,350 | 1,118 | (231) | -17.1% |
| SAN FRANCISCO | 1,350 | 1,118 | (231) | -17.1% |
| San Mateo | 785 | 697 | (88) | -11.2% |
| Santa Clara | 3,883 | 3,897 | 14 | 0.4% |
| SOUTH BAY | 4,667 | 4,593 | (74) | -1.6% |
| Santa Cruz | 118 | 151 | 33 | 28.1% |
| Monterey | 234 | 180 | (55) | -23.3% |
| San Benito | 11 | 11 | 0 | -0.7% |
| COAST | 363 | 342 | (22) | -5.9% |
| BAY REGION | 11,196 | 10,406 | (790) | -7.1% |
| CALIFORNIA | 37,855 | 36,132 | (1,723) | -4.6% |
| U.S. | 265,878 | 269,588 | 3,710 | 1.4% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, 1991, 1993

- Is the Environmental Cluster evenly distributed, or are there pockets of concentration within the region?

**Table 17**
**Proportional Distribution of the Environmental Cluster, Bay Area Region, 1991, 1993**

| Region | Share of Cluster Employment 1991 | Share of Cluster Employment 1993 | Change in Share of Employment 1991-93 |
|---|---|---|---|
| Alameda | 24.5% | 23.5% | -1.0% |
| Contra Costa | 11.0% | 10.8% | -0.3% |
| EAST BAY | 35.5% | 34.2% | -1.3% |
| Marin | 2.4% | 2.1% | -0.3% |
| Napa | 0.6% | 0.4% | -0.3% |
| Solano | 1.4% | 2.2% | 0.8% |
| Sonoma | 3.1% | 3.0% | -0.2% |
| NORTH BAY | 7.5% | 7.6% | 0.1% |
| San Francisco | 12.1% | 10.7% | -1.3% |
| SAN FRANCISCO | 12.1% | 10.7% | -1.3% |
| San Mateo | 7.0% | 6.7% | -0.3% |
| Santa Clara | 34.7% | 37.4% | 2.8% |
| SOUTH BAY | 41.7% | 44.1% | 2.5% |
| Santa Cruz | 1.1% | 1.4% | 0.4% |
| Monterey | 2.1% | 1.7% | -0.4% |
| San Benito | 0.1% | 0.1% | 0.0% |
| COAST | 3.2% | 3.3% | 0.0% |
| BAY REGION | 100.0% | 100.0% | 0.0% |

Source: ADE, based on ES202 data from Minnesota Implan Group

- Where are the component industries located?
- Do the subregional economies specialize in different aspects of the Environmental Cluster?

**Table 18**
**Distribution of Component Industries of the Environmental Cluster by Subregion*, 1993**

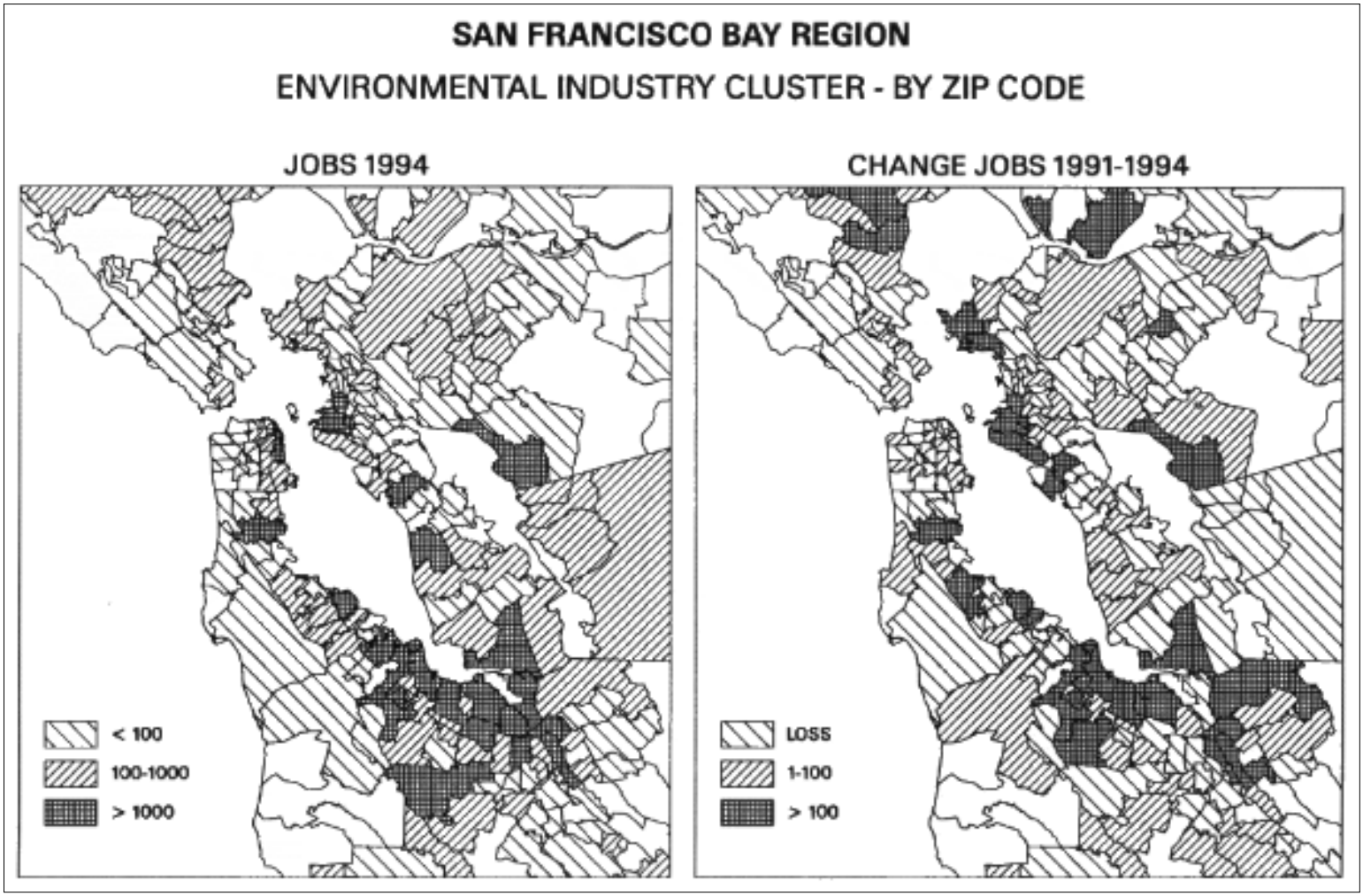
| SIC | Description ** | East Bay | North Bay | San Francisco | South Bay | Coast | Regional Total |
|---|---|---|---|---|---|---|---|
| 3823 | Process control instruments (20%) | 21% | 5% | < 1% | 62% | 12% | 100% |
| 3564 | Blowers and fans | 63% | 20% | < 1% | 17% | 0% | 100% |
| 3826 | Analytical instruments | 6% | 2% | 1% | 91% | < 1% | 100% |
| 3589 | Service industry machinery, nec (20%) | 15% | 36% | < 1% | 49% | < 1% | 100% |
| 3821 | Laboratory apparatus and furniture (10%) | 88% | 0% | 0% | 12% | 0% | 100% |
| 8711 | Engineering services (8%) | 28% | 6% | 29% | 34% | 2% | 100% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8734 | Testing laboratories (40%) | 27% | 9% | 3% | 59% | 2% | 100% |
| 8731 | Commercial physical research (10%) | 23% | 3% | 2% | 71% | 1% | 100% |
| 4959 | Sanitary services, nec (80%) | 53% | 9% | 0% | 37% | 0% | 100% |
| 8999 | Services, nec (10%) | 23% | 0% | 47% | 24% | 6% | 100% |
| 5093 | Scrap and waste materials (100%) | 50% | 9% | 11% | 26% | 5% | 100% |
| | CLUSTER TOTAL | 34% | 8% | 11% | 44% | 3% | 100% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1993

*Subregions: East Bay=Alameda and Contra Costa; North Bay=Marin, Napa, Solano, and Sonoma; San Francisco; South Bay=San Mateo and Santa Clara; Coast=Santa Cruz, Monterey, and San Benito.

** Percentages of the proportion of jobs in these industries that are related to the environmental cluser.




| Environmental Technologies Cluster | |
|---|---|
| 356 | General Industry Machinery |
| 3564 | Blowers and fans |

| | | |
|---|---|---|
| 358 | Refrigeration and Service Machinery | |
| | 3589 | Service industry machinery, nec |
| 382 | Measuring & Controlling Devices | |
| | 3821 | Lab apparatus and furniture |
| | 3823 | Process control instruments |
| | 3826 | Analytical instruments |
| 495 | Sanitary Services | |
| | 4959 | Sanitary services, nec |
| 509 | Misc. Durable Goods-Wholesale | |
| | 5093 | Scrap and waste materials |
| 871 | Engineering & Architectural Services | |
| | 8711 | Engineering services |
| 873 | Research & Testing Services | |
| | 8731 | Commercial physical research |
| | 8734 | Testing laboratories |

- How is employment within the Multimedia Cluster distributed within the region?

**Table 19**
**Spatial Distribution of the Multimedia Cluster, Bay Area Region, 1991, 1993**

| | Cluster Employment 1991 | Cluster Employment 1993 | Net Change in Employment 1991-93 | % Change in Employment 1991-93 |
|---|---|---|---|---|
| Alameda | 6,753 | 7,879 | 1,126 | 16.7% |
| Contra Costa | 1,714 | 2,045 | 332 | 19.4% |
| EAST BAY | 8,467 | 9,924 | 1,457 | 17.2% |
| Marin | 1,825 | 2,290 | 465 | 25.5% |
| Napa | 123 | 181 | 58 | 47.2% |
| Solano | 188 | 133 | (55) | -29.2% |
| Sonoma | 837 | 724 | (113) | -13.5% |
| NORTH BAY | 2,973 | 3,327 | 354 | 11.9% |
| San Francisco | 6,891 | 6,849 | (43) | -0.6% |
| SAN FRANCISCO | 6,891 | 6,849 | (43) | -0.6% |
| San Mateo | 5,390 | 6,810 | 1,421 | 26.4% |
| Santa Clara | 36,260 | 37,920 | 1,660 | 4.6% |
| SOUTH BAY | 41,649 | 44,730 | 3,081 | 7.4% |
| Santa Cruz | 2,288 | 1,804 | (484) | -21.2% |
| Monterey | 736 | 675 | (61) | -8.3% |

| | | | | |
|---|---|---|---|---|
| San Benito | 12 | 15 | 3 | 20.8% |
| COAST | 3,036 | 2,493 | (543) | -17.9% |
| BAY REGION | 63,017 | 67,324 | 4,307 | 6.8% |
| CALIFORNIA | 201,726 | 209,697 | 7,971 | 4.0% |
| U.S. | 982,820 | 1,004,312 | 21,492 | 2.2% |

Source: ADE, based on ES202 data from the Minnesota Implan Group, Inc., 1991, 1993

- Is the Multimedia Cluster evenly distributed, or are there pockets of concentration within the region?

**Table 20**
**Proportional Distribution of the Multimedia Cluster, Bay Area Region, 1991, 1993**

| Region | Share of Cluster Employment 1991 | Employment 1993 | Change in Share of Employment 1991-93 |
|---|---|---|---|
| Alameda | 10.7% | 11.7% | 1.0% |
| Contra Costa | 2.7% | 3.0% | 0.3% |
| EAST BAY | 13.4% | 14.7% | 1.3% |
| Marin | 2.9% | 3.4% | 0.5% |
| Napa | 0.2% | 0.3% | 0.1% |
| Solano | 0.3% | 0.2% | -0.1% |
| Sonoma | 1.3% | 1.1% | -0.3% |
| NORTH BAY | 4.7% | 4.9% | 0.2% |
| San Francisco | 10.9% | 10.2% | -0.8% |
| SAN FRANCISCO | 10.9% | 10.2% | -0.8% |
| San Mateo | 8.6% | 10.1% | 1.6% |
| Santa Clara | 57.5% | 56.3% | -1.2% |
| SOUTH BAY | 66.1% | 66.4% | 0.3% |
| Santa Cruz | 3.6% | 2.7% | -1.0% |
| Monterey | 1.2% | 1.0% | -0.2% |
| San Benito | 0.0% | 0.0% | 0.0% |
| COAST | 4.8% | 3.7% | -1.1% |
| BAY REGION | 100.0% | 100.0% | 0.0% |

Source: ADE, based on ES202 data from Minnesota Implan Group

- Where are the component industries located?
- Do the subregional economies specialize in different aspects of the Multimedia Cluster?

**Table 21**
**Distribution of Component Industries of the Multimedia Cluster by Subregion*, 1993**

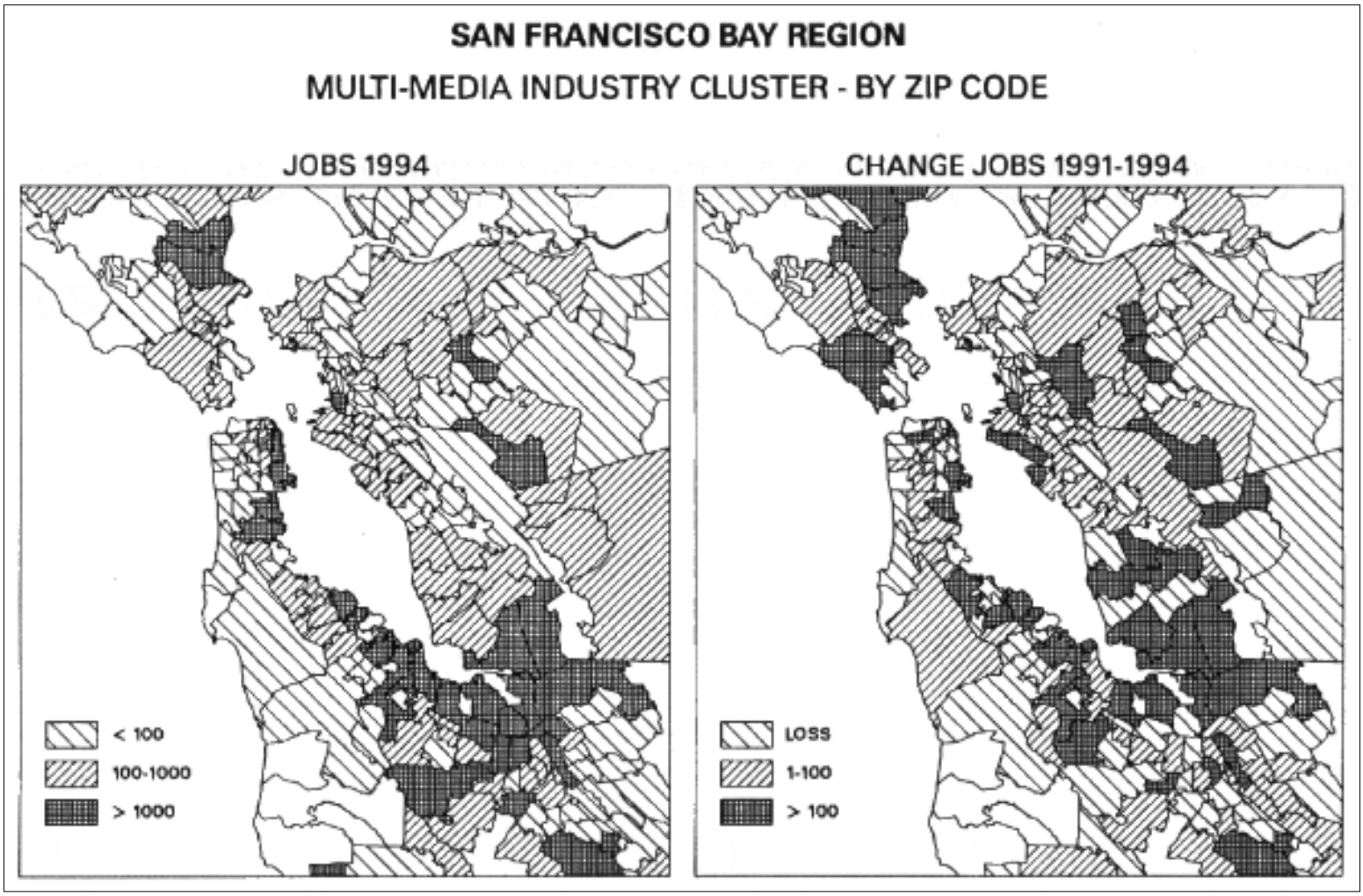
| SIC | Description** | East Bay | North Bay | San Francisco | South Bay | Coast | Regional Total |
|---|---|---|---|---|---|---|---|
| 3571 | Electronic computers (40%) | 4% | < 1% | < 1% | 91% | 4% | 100% |
| 3572 | Computer storage devices (40%) | 8% | 5% | 1% | 83% | 2% | 100% |
| 3575 | Computer terminals (30%) | 7% | 0% | 11% | 83% | 0% | 100% |
| 3577 | Computer peripheral equipment, nec (50%) | 31% | 3% | < 1% | 65% | < 1% | 100% |
| 3651 | Household audio and video equipment (20%) | 29% | 9% | 2% | 59% | 2% | 100% |
| 3652 | Prerecorded records and tapes (30%) | 3% | 2% | < 1% | 94% | 0% | 100% |
| 3661 | Telephone and telegraph apparatus (15%) | 4% | 4% | < 1% | 88% | 4% | 100% |
| 3663 | Radio & TV communications equipment (50%) | 17% | 1% | 2% | 78% | 1% | 100% |
| 3669 | Communications equipment, nec (5%) | 9% | 0% | 6% | 57% | 28% | 100% |
| 3695 | Magnetic and optical recording media (50%) | 32% | 0% | < 1% | 68% | 0% | 100% |
| 2741 | Miscellaneous publishing (60%) | 13% | 8% | 21% | 52% | 7% | 100% |
| 2752 | Commercial printing, lithographic (50%) | 23% | 10% | 21% | 40% | 6% | 100% |
| 2759 | Commercial printing, nec (50%) | 24% | 6% | 39% | 29% | 2% | 100% |
| 7371 | Computer programming services (50%) | 21% | 5% | 11% | 60% | 3% | 100% |
| 7372 | Prepackaged software (30%) | 21% | 8% | 7% | 52% | 13% | 100% |
| 7373 | Computer integrated systems design (75%) | 7% | 9% | 3% | 80% | 1% | 100% |
| 7375 | Information retrieval services (80%) | 13% | < 1% | 26% | 56% | 4% | 100% |
| 7379 | Computer related services, nec (20%) | 24% | 3% | 26% | 45% | 2% | 100% |
| 7334 | Photocopying & duplicating services (10%) | 18% | 8% | 38% | 35% | 1% | 100% |
| 7336 | Commercial art and graphic design (60%) | 15% | 7% | 42% | 32% | 4% | 100% |
| 7812 | Motion picture & video production (90%) | 18% | 21% | 45% | 13% | 3% | 100% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7819 | Services allied to motion pictures (40%) | 8% | 36% | 33% | 23% | 1% | 100% |
| 7311 | Advertising agencies (20%) | 11% | 6% | 62% | 20% | 1% | 100% |
| | CLUSTER TOTAL | 15% | 5% | 10% | 66% | 4% | 100% |

*Subregions: East Bay=Alameda and Contra Costa; North Bay=Marin, Napa, Solano, and Sonoma; San Francisco; South Bay=San Mateo and Santa Clara; Coast=Santa Cruz, Monterey, and San Benito.

** Peretages estimate the proportion of jobs in these industies that are related to the multimedia cluster.

Source: ADE, based on ES202 data from Minnesota Implan Group




| Multimedia Industry Cluster | | |
|---|---|---|
| 274 | Misc. Publishing | |
| 275 | Commercial Printing | |
| | 2752 | Commercial printing, litho. |
| | 2759 | Commercial printing, nec |
| 357 | Computer & Office Equipment | |
| | 3571 | Electronic computers |
| | 3572 | Computer storage devices |

| | | |
|---|---|---|
| | 3575 | Computer terminals |
| | 3577 | Computer peripheral equip, nec |
| 365 | Household Audio & Video Equipment | |
| | 3651 | Household audio & video equip |
| | 3652 | Prerecorded record and tapes |
| 366 | Communications Equipment | |
| | 3661 | Telephone & telegraph apparatus |
| | 3663 | Radio & TV communications equip |
| | 3669 | Communications equip, nec |
| 369 | Misc. Electrical Equipment & Supplies | |
| | 3695 | Magnetic & optical recording media |
| 731 | Advertising | |
| | 7311 | Advertising agencies |
| 733 | Mailing, Reproduction, Stenographic | |
| | 7334 | Photocopying & duplication svcs |
| | 7336 | Commercial art & graphic design |
| 737 | Computer & Data Processing Services | |
| | 7371 | Computer programming svcs |
| | 7372 | Prepackaged software |
| | 7373 | Computer integrated sys design |
| | 7375 | Info retrieval services |
| | 7379 | Computer related services, nec |
| 781 | Motion Picture Production & Services | |
| | 7812 | Motion picture & video prod. |
| | 7819 | Services allied to motion pictures |

# The Multimedia Industry Cluster in the Bay Area

California Economic Strategy Panel
San Francisco Bay Area Regional Forum

## About this Paper

This paper was produced by Collaborative Economics, Inc. on behalf of the California Economic Strategy Panel. The California Economic Strategy Panel, a distinguished group of public and private sector leaders appointed by the Legislature and the Governor, has launched an economic strategy process to identify the opportunities and needs facing industry clusters in the various California regions. The term "industry cluster" refers to a geographic concentration of related companies, talent, and support institutions that drive wealth creation in a region.

This paper, and a counterpart paper on the Bay Area's environmental industry cluster, are background material for the Regional Forum that the Panel is holding in the Bay Area on July 21, 1995. Executives from the multimedia cluster will discuss with the Panel the opportunities to further develop the cluster in the Bay Area, and barriers to that growth. This paper will then be revised and submitted to the Panel for inclusion in their California strategy document due in December, 1995.

## Contents



## Executive Summary

Multimedia developers, content providers, and technology providers are joining forces to

position the Bay Area at the cutting-edge of an industry with explosive growth potential. The major constraint to future growth of this cluster is the lack of an accessible network linking customers, multimedia developers, content providers, technology companies, and specialized infrastructure. A second major constraint is shortage of specialized talent to meet the industries evolving needs.

## I. COMPONENTS OF THE MULTIMEDIA CLUSTER

The structure of the multimedia cluster is evolving as telecommunications and computer technologies combine in an unpredictable fashion. Defined broadly, the multimedia cluster is the creators, producers, and distributors of software and hardware that integrate video, sound, text, and graphics. This integration is all done in a **digital** medium to produce a multimedia product or service.

There are increasingly diverse customers for multimedia products. The entertainment industry has been the primary markets for multimedia. However, advances in cable modem and ATM technology offer tremendous long-term potential for multimedia products and services in business, education, and healthcare.

The supplier sector of the industry is comprised of three distinct industry sub-groupings; technology companies, multimedia developers, and content providers. It is still unclear whether this division is a short-term or long-term phenomenon. However, considerable evidence suggests that the industry will remain a diffuse network of highly flexible and specialized firms. Both film production and high technology have long traditions of network forms of production organization.

## II. SIZE AND GROWTH

An estimated 67,000 people representing more than 2,000 firms are engaged in multimedia-related activities in the Bay Area. The concentration of multimedia activity in the Bay Area is two and a half times the national average. Multimedia-related jobs pay 65% more than the average Bay Area salary.

## III. EVOLUTION

Multimedia is a "fusion technology" that benefits from the integration of several different industries, including design, software, publishing, computers, communications equipment, and consumer electronics. This fusion has been driven by the increasing importance of information based industries.

The diverse economic foundation of the Bay Area has been an important component in meeting the needs of this fusion technology. The diversity of the region's economic base has allowed for innovative partnering, valued input from varied disciplines, and the development of unique goods and services. All of the regions in the Bay Area make a unique contribution to the multimedia industry.

***North Bay*** counties have high concentrations of printing and publishing, and motion picture production.

***East Bay*** counties are strong in computer programming and software development, research, and communications infrastructure.

***San Francisco*** boasts strengths in art and graphic design, printing, advertising and legal services. The South of Market Street (SOMA) region has been a magnet for multimedia developers. The Advertising Alley region (Broadway and Sansome) hosts a concentration of multimedia content providers.

***Silicon Valley*** is home to computers, semiconductors, software, and venture capital.

## IV. RELATIONSHIPS

The most conspicuous relationship characteristic in the multimedia industry is the varied and tenuous relationships between the traditionally distinct technology and content industries. This dynamic will continue to be an important factor in the near future. The marketplace for multimedia goods and services has yet to offer clear indication of the appropriate combination of various content matter with the new interactive features of multimedia.

While the relationship between multimedia developers and their potential consumers is still in flux, the relationship of the industry to the broader community infrastructure is more apparent. The concentration of the multimedia industry in the Bay Area is a natural match. The industry has relied upon the region's traditional strengths (i.e. higher education, technology, quality of life, investment capital) to incubate a specialized infrastructure. This specialized infrastructure is comprised of the unique, shared resources that contribute to and benefit from the multimedia cluster. These include research labs, universities, training organizations, investors, associations, attorneys, accountants, and other professional services providers.

## V. OPPORTUNITIES

Multimedia is poised to experience significant growth for two reasons;

Recent technological advances (such as improvements in cross-platform authoring and graphical user interfaces) have yet to be widely incorporated by the creative communities utilizing multimedia. As multimedia developers are able to experiment with new technologies, the potential applications of multimedia will become more apparent.

The cluster will also grow with expanded and innovative uses of existing communications technologies, mainly the World Wide Web, cable television, and telephone lines.

## VI. REQUIREMENTS FOR FUTURE GROWTH

The major requirement is the growth of network relationships across public, private, and non-profit domains. While the industry is defined by its unique cross-industry relationships, such relationships require considerable investment of time and effort. As a fusion technology, multimedia relies upon the combination of expertise resulting from these relationships to create new goods and services.

High demand exists for people with experience and skills in:

- Digital video production

- Digital assembly (integrating video, text, and/or content)

- Animation

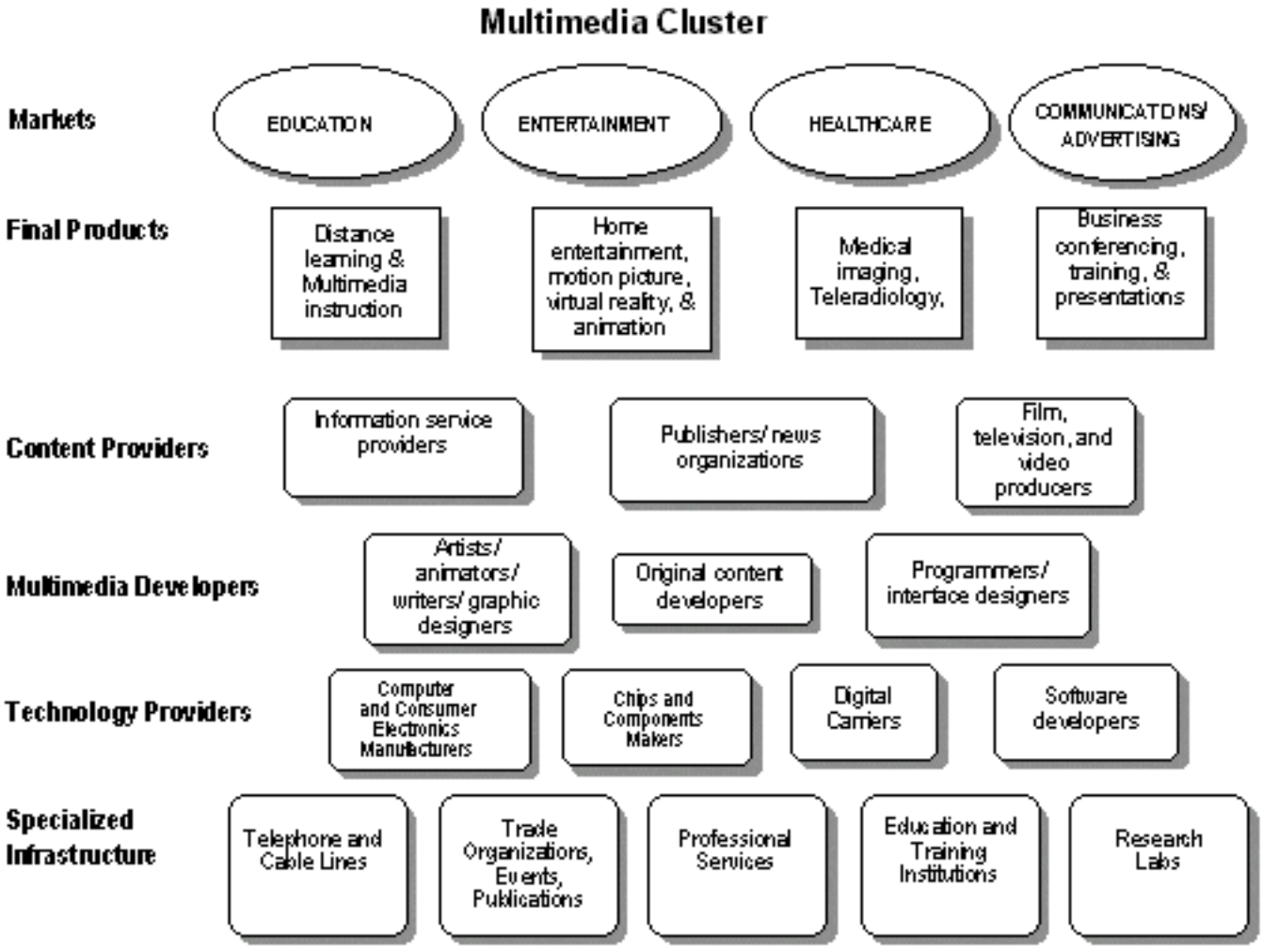
- C++ object oriented programming

- Communication/story-telling

Some of the current technical barriers to advancing the multimedia industry include the elimination of incompatible multimedia platforms, data compression, video servers, switching infrastructure, and achievement off cross-industry standards.

## I. Major Components of the Multimedia Industry Cluster

**Figure 1**




*Oftentimes, the multimedia industry is understood to be comprised only of companies developing CD-ROMs the relevant hardware technology for the personal computer format.* In addition, projections of multimedia growth focus almost singularly on job growth from product development for remote multimedia communication, such as for interactive TV or the World Wide Web.

*This conception ignores the tremendous effect interactive multimedia is having on numerous information-based industries.* For example, probably the most profound lesson to be taken from multimedia's delivery via CD-ROMs has been the success of original content versus content transferred from other media. The success of original content CD-ROMs illustrates how multimedia is requiring new skills and approaches for traditional disciplines. Developing content which is engaging in a non-linear environment has ramifications in publishing, broadcasting, recording, movie and television production.

*Especially in the context of the work of the California Economic Strategy Panel the varied impacts of multimedia need to be understood in their broad context. Hence, the multimedia cluster is defined as the creators, producers, and distributors of the software and hardware that integrate digital-video, digital-sound, digital-text, and digital-graphics to produce a multimedia product or service.* The United States market for multimedia hardware and software is projected to quadruple by the end of the decade.

**FINAL PRODUCT SECTORS**

Education

*Multimedia instruction*--An increasing number of schools and training programs is developing and employing multimedia technologies at all instructional levels. Remedial and self-paced learning are the primary entry points in this market. According to a survey by Technological Horizons in Education (THE) magazine, education alone will spend $672 million for multimedia products this year. In addition, home education software sales rose 128% in 1993 to $90 million from $40 million in 1992.

*Distance learning*--The combining of multimedia and telecommunications technologies enables the expansion of the classroom to include remote locations miles away and offers new interactive learning opportunities for students. Distance learning relies heavily on video conferencing capabilities, and is therefore reliant on the development of video codecs, ISDN, and multimedia software.

Business communications

Similar to distance learning, this market relies heavily on the wide adoption of telecommunications technologies. The business market has several areas where multimedia technology will be applied. Video conferencing and document sharing, training, sales presentations, and telecommuting are potentially significant applications of multimedia. In addition, unlike the growth being driven by entertainment markets, these multimedia applications are not dependent on the provision of content and all of the licensing issues it raises.

Healthcare

Perhaps no other industry is so dependent on quality data, yet so under funded in its information systems, than the healthcare industry. Under development now, electronic records will begin to replace the large amount of paper generated by the healthcare system and dramatically reduce reliance on poorly handwritten instructions.

*Telemedicine*--This technology will enable medical specialists anywhere to review digitized X-rays, CAT scans, and similar medical documentation from any location in the country. For example, X-rays could be communicated from smaller or more isolated medical facilities to the leading research hospitals for quick diagnosis. Proposed telemedicine systems will allow doctors to see and talk to patients at a remote site, but also to examine a patient's eyes, ears, nose, and throat and in real-time.

Entertainment

The entertainment market, though relatively mature, is driving the development of new multimedia and related technology, especially computer-generated graphics. "Our work with Disney is now more demanding than the work we do for defense applications, like military flight simulators," said Ed McCracken, CEO of Silicon Graphics. This comment is indicative of the historic shift in the forces that are driving this new technology development. The recent collaboration between Silicon Graphics and Dreamworks SKG to create the Dreamworks Digital Studio, the first end-to-end digital movie studio, is expected to demonstrate multimedia's efficiency advantages for adapting content to multiple mediums. The market for home entertainment video games have now surpassed domestic movie box office sales. Retail sales of interactive hardware and software were $10.3 billion in 1994 and expected to grow to $23.5 billion by 1999.

## SUPPLIER SECTORS

Multimedia's supplier sectors reflect the convergence of activity in the three interrelated areas noted in figure I: 1) advances in the enabling technology, 2) provision of content and 3) the development and integration of the "media" itself, all into the "multimedia industry."

***Technology providers***--These are the producers of the enabling technology and include firms in computer hardware and software, consumer electronics, and digital communications. Examples include: Apple, Atari, Autodesk, C-Cube, Creative Labs, Hewlett-Packard, Macromedia, Netcom, Netscape, Sega, Silicon Graphics, and Storm Technology.

***Multimedia developers***--These are the integrators and developers of the "media" itself and include artists, writers, programmers, animators, interface designers, and others. Examples include: Broderbund, Colossal Pictures, Crystal Dynamics, Drew Pictures, Electronic Arts, Fathom Pictures, Ikonic Interactive, Luminaire, Medius IV, Mindscape, Morgan Interactive, Pop Rocket.

***Content providers***--These are the providers of information presented through multimedia and include film, TV and video entertainment companies, print publishers, news organizations, and information systems service providers. Examples include: Addison-Wesley, PBS station KQED, LucasArts Entertainment, Wadsworth Publishing, and Ziff-Davis Publishing Company. In addition, HBO, NBC, TCI, Sony, and others also have significant operations in the Bay Area.

## COMMUNITY INFRASTRUCTURE

These are the unique, shared resources that contribute to and benefit from the multimedia cluster. This infrastructure is comprised of research labs, universities, training organizations, investors, associations, attorneys, accountants, and other professional services providers. Examples include: DesignLink (multimedia-focused electronic bulletin board), Kleiner, Perkins, Caufield & Byers (venture capital), International Interactive Communications Society, Lawrence Livermore National Laboratory, Morph's Outpost (technical trade publication), Morrison & Foerster (law firm), the Multimedia Development Group, Pacific Bell, San Francisco State University's Multimedia Studies program, UC Berkeley's Computer Science Department, and others.

## II. Industry Size and Growth

**Figure 2**
Bay Area Multimedia Cluster Size and Growth Chart

| Sectors within the Multimedia CLUSTER | Employment 1993 | Employment Concentration | Average Earnings | A.A.G.R. 88-93 | Net change Emp. 88 - 93 |
|---|---|---|---|---|---|
| **Technology Companies** | | | | | |
| Electronic computers (40%) | 15,674 | 626 | $66,246 | -2.8% | -2,378 |
| Computer storage devices (40%) | 2,114 | 479 | $50,988 | 13.3% | 981 |
| Computer terminals (30%) | 178 | 117 | $50,589 | 52.9% | 157 |
| Computer peripheral equipment, nec (50%) | 3,766 | 453 | $50,711 | -2.4% | -486 |
| Household audio and video equipment (20%) | 159 | 46 | $41,542 | -5.4% | -50 |
| Prerecorded records and tapes (30%) | 258 | 124 | $25,512 | -0.5% | -6 |
| Telephone & telegraph apparatus (15%) | 1,748 | 363 | $57,232 | 4.9% | 373 |
| Radio & TV communications equipment (50%) | 2,604 | 172 | $52,978 | 2.4% | 288 |
| Communications equipment, nec (5%) | 82 | 228 | $44,188 | 5.0% | 18 |
| Magnetic and optical recording media (50%) | 3,034 | 1133 | $52,892 | 5.5% | 717 |
| **Multimedia Developers** | | | | | |
| Miscellaneous publishing (60%) | 1,198 | 85 | $34,231 | -3.4% | -224 |
| Commercial printing, lithographic (50%) | 4,349 | 85 | $32,874 | 0.2% | 45 |
| Commercial printing, nec (50%) | 3,187 | 132 | $35,983 | -0.6% | -96 |
| Photocopying & duplicating services (10%) | 328 | 201 | $24,095 | 0.0% | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Commercial art and graphic design (60%) | 1,286 | 154 | $38,277 | 4.8% | 267 |
| Computer programming services (50%) | 7,272 | 269 | $59,769 | 22.9% | 4,674 |
| Prepackaged software (30%) | 5,296 | 426 | $64,306 | 14.6% | 2,613 |
| **Content Providers** | | | | | |
| Advertising agencies (20%) | 1,170 | 132 | $50,509 | -1.3% | -77 |
| Computer integrated systems design (75%) | 9,265 | 393 | $69,616 | 7.6% | 2,832 |
| Information retrieval services (80%) | 948 | 85 | $49,464 | 15.6% | 490 |
| Motion picture & video production (90%) | 1,534 | 50 | $49,317 | 0.5% | 40 |
| Services allied to motion pictures (40%) | 374 | 96 | $46,136 | 12.4% | 166 |
| **Specialized Economic Infrastructure** | | | | | |
| Computer related services, nec (20%) | 1,502 | 214 | $54,418 | 12.7% | 676 |
| **Totals** | 67,324 | 268 | $56,709 | 3.6% | 11,019 |

*Source: MIG, Inc.; State Data Packages, Corptech, Collaborative Economics*

The previous table provides a best-guess estimate of the 12-county Bay Area employment in multimedia using Standard Industry Classification data. Some of the significant findings are:

Roughly 67,000 people are engaged in multimedia-related activities in the Bay Area.

Technology companies employ 44%, 34% are multimedia developers, 20% are content providers, and at least 2% provide specialized multimedia services.

The concentration of multimedia activity in the Bay Area is two and a half times the national average for a region of this size population.

On average, multimedia jobs pay 65% more than the Bay Area average.

The average size of a Bay Area multimedia "technology company" is 180 employees, compared with 14 employees in the average "multimedia developer" firm.

The cluster, on average, has grown in employment at 4% per year.

The fastest growing sector has been the manufacturing of computer terminals, growing at nearly 53% per year between 1988 and 1993.

## III. Cluster Evolution

**Figure 3**

| Technology | Introduction |
|---|---|
| Arcade Games | Early 1970's |
| Home Video Games | Mid-1970's |
| Personal Computers | Late 1970's |
| Nintendo 8-bit System | 1985 |
| Portable Games | Late 1980's |
| Home 16-bit Systems | 1990 |
| CD Systems | Early 1990's |
| 32-bit Systems | 1993 |
| On-line Systems and Services | Mid-1990's |

The component parts of multimedia technology - graphics, sound, video, and text - have been developing individually for a considerable time period. However, by the 1980's the efforts to digitally integrate the technological advances in each area created a unique identity for multimedia.

The primary driver of the technological developments of the 1980's was the home-based video game market. Realistic sound, high resolution, and 3D motion were the competitive bases for the game industry at this time.

While the games market pushed the refinement of computer-generated graphics, developments in video technology were the foundation for the emergence of a multimedia industry community.

The late 1980s saw the industry create a home for itself in San Francisco's SOMA district (south of Market street area). "Multimedia Gulch"as the area has become knownarose from a long tradition of diverse creative industries in the region. Printing, photography, motion picture, audio recording, and desktop publishing have all been active in the area. Advances in the area of digital-video, digital-audio, and digital-graphics opened new market opportunities for the area's industries. Creative talent unafraid to work with the new technology and engineers open to the possibilities of digital technology for video, graphics and sound combined to establish an environment of mutual benefit for the various traditional disciplines.

Today, development of multimedia products and services is driven by three fundamental phenomena:

***Cross-fertilization***--New relationships between technology companies, content providers, and specialized communications infrastructure. Multimedia is one of the many new "fusion technologies" that have enormous growth and development potential because multimedia involves the integration of several different industries. Once traditional industriesmedia and publishingare merging with the computer, communication, software, and consumer electronics industries to create multimedia education tools and new forms of interactive entertainment.

***Creativity Gap***--At present there is a 'stickiness' to industry development. At points the

creative individuals providing original content and products or services for multimedia are ahead of the technological capabilities of the medium. At other times, technological advances are not immediately exploited by these creative individuals. It can take a considerable amount of experimentation before a new technological development's potential is realized. Currently, the creative side of multimedia goods and services is considered lacking. As the technology becomes more sophisticated the industry is requiring a new set of specialized skills which include communication and story-telling.

***Exploitation of communications technologies***--Expanded and innovative uses of existing communications technologies, mainly the Internet, cable television, and telephone lines. While multimedia hit roadblocks in 1994 with the failure of federal telecommunications deregulation and weak interactive TV market response, 1995 saw tremendous growth on the World Wide Web. Which communications technologies will eventually prove to be appropriate mediums for multimedia products is still unclear.

## IV. Cluster Relationships

*The development of any region's multimedia cluster in the future will have to do less with entertainment and information technologies than with the ability of that region to develop new forms of interaction and involvement.* Competitive firms will be those which concentrate on their core competencies and apply their unique advantages to various niche markets.

A survey by the research and consulting firm Gistics found that in 1993 more than 95% of Multimedia Gulch firms were unprofitable. Those that were successful were usually active in several lines of related businesses, providing customized contract work developing programs, digitizing material, and consulting.

Firms which have exploited market niches for multimedia goods and services find that they must move quickly to meet diverse and fast-changing market opportunities. Many have honed this kind of flexible specialization by building a repository of reusable assets that can be configured to meet a variety of customer needs. Obviously, many of these assets take the form of specific licensed content matter or original in-house created content which can be re-packaged for different uses. This is similar to the film industry's use of stock footage.

However, these reusable assets are not limited to end products. Relationships between industry participants with complementary specialties is another important reusable asset. In fact, the development of these relationships is a fundamental strategy for many multimedia firms. For example, many firms are adopting strategies to help address difficulties such as the creation of an appropriate distribution system. Autodesk Developer Program and Apple Multimedia Program are examples of content developer support projects which offer services such as co-marketing opportunities via CD-ROMs which highlight content developer products and services.

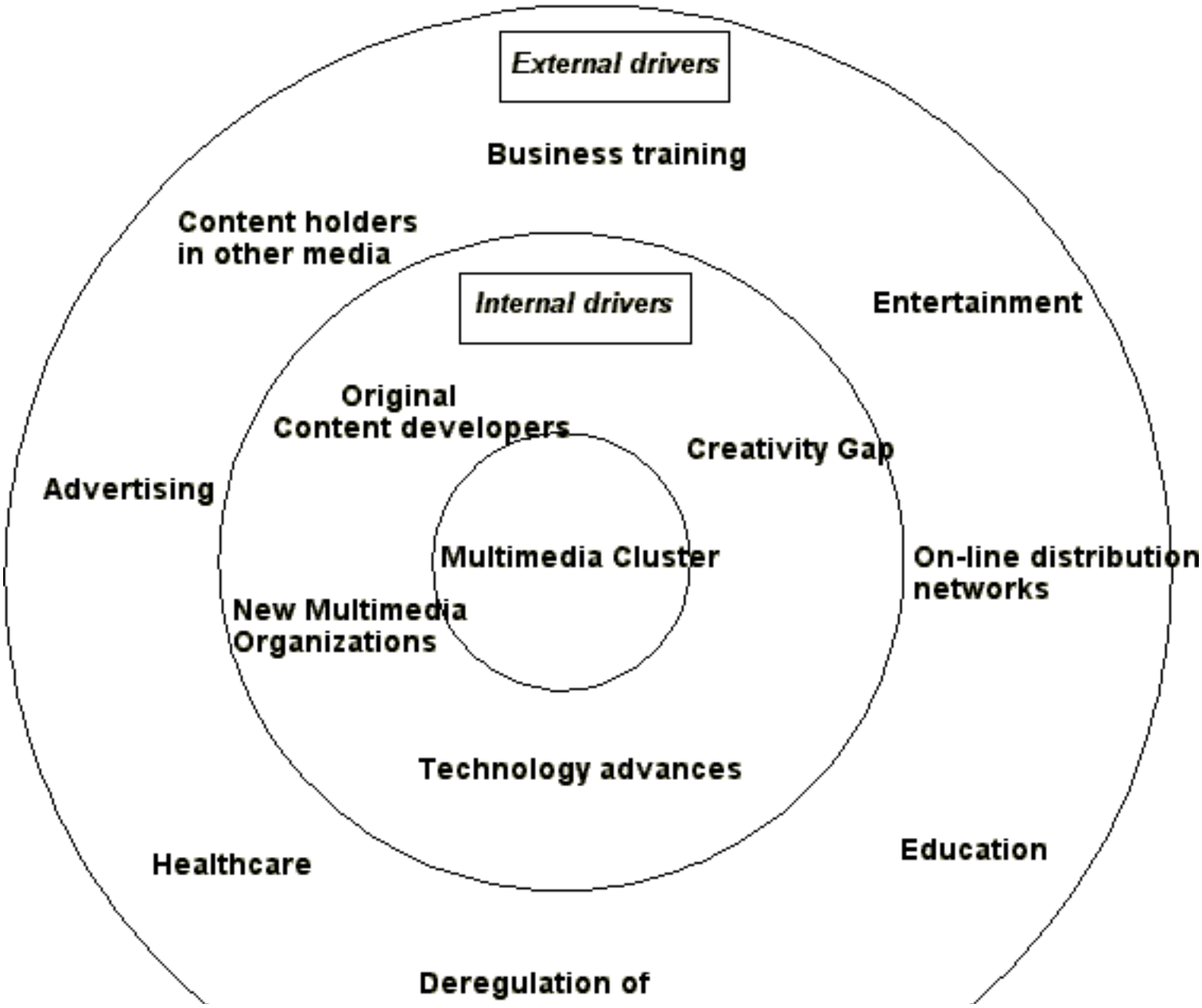
**Figure 4**

**New Bay Area Organizations Supporting Multimedia Industry**

| Organization | Affiliated With | Focus |
|---|---|---|
| **Bay Area Multimedia Partnership** | **Bay Area Economic Forum** | **Growing the multimedia industry through market development** |
| **Multimedia Institute** | **Joint Venture: Silicon Valley Network** | **Workforce Training "Filling the Creativity Gap"** |
| **Multimedia Technology Alliance** | **Smart Valley and NASA** | **Addressing technological barriers to delivering multimedia products over the Internet** |

## V. Future Opportunities

**Figure 5**




Maintaining the region's edge in multimedia depends on the degree of interaction and involvement of the Bay Area's key technology sectors and markets in solving problems of mutual interest. The Bay Area's dynamism as a region, its diversity of technology industries, and its high concentration of design and marketing capabilities are combining to incubate the multimedia industry.

Some industry observers have predicted that multimedia, like the Internet, will be geography-independent because location is irrelevant; and that the Internet, through the World Wide Web and other innovations, will become the center of multimedia innovation. However, many people in the industry are recognizing that economic regions are becoming more important than ever in shaping new industries, primarily due to the importance of strong professional and inter-firm relationships and the importance of reduced transaction costs (e.g., the costs associated with accessing talent, technology, capital, specialized communications infrastructure, and specialized suppliers).

An important example of the changes on the horizon is the shift of multimedia technology away from its focus on entertainment. Entertainment and games, in general, offer very low financial returns with large risks of failure. Erstwhile developers of game and entertainment products are now beginning to diversify and turn to business and education applications. While educational CD-ROM titles are selling exceptionally well the exploitation of multimedia technology for education is far from operating at its potential. In the United States, annual multimedia sales growth is expected to accelerate from 26% in 1993 to a projected peak of 44% by 1996, making it one of the fastest growing markets in the country.

With multimedia, the distinction between developers and customers is often blurred, as developers also often serve as the most demanding and technologically sophisticated customers. The number of users of multimedia is expected to skyrocket as products become easier to use and more affordable. End-users are increasingly aware of the impact multimedia can have on a range of applications, most notably training and education, business presentations, and home entertainment. As end-user awareness and acceptance grows, multimedia software and hardware providers are expected to invest more in R&D.

## VI. Requirements for Future Growth of the Regional Cluster

**Figure 6**

**Key Factors**

| | Strengths | Weaknesses |
|---|---|---|

| | | |
|---|---|---|
| **Workforce** | • Large technical and creative labor pools.<br>• Adaptive and entrepreneurial | High degree of specialization results in poorly integrated skills |
| **Technology** | No technologically unattainable barriers on the horizon. | Standardization on numerous fronts remains elusive |
| **Capital** | Venture funding for emerging technologies is plentiful | Strong competition for venture funding from other industries such as biotechnology |
| **Physical Infrastructure** | | Limited availability of cheap production space |
| **Information Infrastructure** | • Abundance of multimedia professional organizations events and publications.<br>• The world's widest use of the Internet occurs in the Bay Area. | Uncertain future of deregulated local phone service in California has raised roadblocks to development of the necessary communications technologies. |
| **Tax and Fiscal Policy** | | Other regions such as New York and Las Vegas have been more proactive in adapting public policy to attract multimedia developers |
| **Regulatory Policy** | Region has examples such as Multimedia "Gulch" to develop industry regulation policy which meets the needs of various | Uncooperative zoning problems |
| **Quality of Life** | Exceptional | Expensive |
| **Networking** | • strong network of niche market technology and developer firms.<br>• Several active industry organizations; Multimedia Development Group, Bay Area Multimedia Partnership, International Interactive Communications Society | Major joint ventures led by communications and content powerhouses has lost steam |

## SKILLED PEOPLE

The growth of multimedia in the Bay Area is restricted by the number of individuals with creative software programming skills. Experienced programmers at all levels are highly sought after throughout the cluster. In particular, there is high demand for people with experience and skills in:

Digital film and video production

Digital assembly (integrating video, text, and/or content)

Animation

C++ object oriented programming systems

## STATE-OF-THE-ART TECHNOLOGY

The largest technical barriers to advancing the multimedia industry are generally believed to be the elimination of incompatible multimedia platforms and the reduction of data volume.

*Incompatible formats*--As with previous media revolutions, such as the advent of audio and video tapes, incompatible multimedia formats abound, breeding marketplace confusion and consumer distrust.

*Data Compression*--A major barrier to increased use of multimedia products is the sheer volume of data necessary to transmit digital video signals. Copper wire and coaxial cable have limited carrying capacities and the expensive change to fiber optic cables for each household and business will take many more years.

## START-UP AND INVESTMENT CAPITAL

Access to start-up and venture capital for multimedia will continue to be difficult since multimedia has a reputation for being "an art on the verge of becoming a business." For example, the Bay Area's availability of venture capital for multimedia projects remains significant, $160 million dollars was distributed in Silicon Valley during the first quarter of 1995. However, multimedia captured only $16.7 million dollars, just over 10%.

The most likely source of capital for multimedia firms is investments from partners and customers, including cross-equity arrangements.

## COMMUNICATIONS INFRASTRUCTURE

Pacific Bell estimates that currently 25% to 40% of multimedia production time is spent simply moving information between and among various locations. Decreasing the time and costs associated with transmission lags will improve time-to-market and facilitate multimedia's growth. Creation of a region wide high-speed network will reduce product development costs and allow producers to work simultaneously together on projects at various phases.

## ORGANIZATIONAL AND NETWORKING INFRASTRUCTURE

Lastly, informal networks are a key driver of multimedia's development in the Bay Area. There is considerable confusion throughout the industry with what multimedia developers and technology providers can deliver and how consumers want to use multimedia features. Events and institutions that foster contact among industry participants both within the region and beyond contribute powerfully to multimedia's rapid development. Of particular importance are contacts among software programmers, artists and engineers, and the entrepreneurs who can turn technical expertise into successful ventures.

The Las Vegas Convention and Visitors Bureau has a major program to attract developers and assist them in linking with the Los Angeles entertainment industry. New York City is also undertaking a similar effort. By contrast, several multimedia developers in San Francisco are reporting that the city is finding innovative ways of taxing the nascent industry and not cooperating in zoning matters.

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## Contents



## Summary

**I. COMPONENTS OF THE ENVIRONMENTAL INDUSTRY CLUSTER**

Environmental service sectors include waste management, recycling, consulting/engineering, and analytic services. Environmental product sectors include environmental instrumentation, waste management equipment, control/monitoring

equipment, and treatment/abatement equipment.

The cluster is supported by an economic infrastructure that includes research organizations, education/training institutions, specialized business services, environmental advocacy organizations, regulatory agencies, and the media. The industry is unique in the large number of organizations that consider themselves "stakeholders" in its future.

## II. SIZE AND GROWTH

Difficult to define and track, the environmental industry in the Bay Area is estimated to include about 1,200 companies employing approximately 10,000 people. The industry grew 4% annually between 1989 and 1991, and then contracted 3.5% annually between 1991 and 1993.

## III. EVOLUTION

No other industry owes as much of its "raison d'être" directly to government legislation and regulation. By creating new market demand, the steady succession of environmental legislation and regulation stimulated double-digit annual growth in the environmental industry during the 1970s and 1980s.

The 1990s brought dramatic slowdown in industry growth due to recession, industry over-capacity, and regulatory barriers to developing and approving new technologies.

The industry is now in the midst of a major paradigm shift: from cleaning up the "sins of the past," to preventing pollution and waste altogether.

## IV. RELATIONSHIPS

As the industry consolidates and globalizes, alliances between large engineering services organizations and smaller technology companies are proliferatingas are alliances with customers, financiers, research organizations, and governments.

Several new organizations and projects are developing to help accelerate these linkagesAlameda Center for Environmental Technology, Bay Area Economic Forum's Environmental Technology Project, Monterey Bay Science and Technology Center, and Silicon Valley Environmental Partnership.

## V. FUTURE OPPORTUNITIES

Cautious optimism should prevail regarding the future of the environmental industry in the Bay Area. The industry is unlikely to become an easily identifiable, fast-growing driving sector like bioscience, software, or multimedia.

Nevertheless, building on the Bay Area's rich technical base and unique demands, the region can use its emerging expertise in environmental instrumentation, pollution prevention (equipment, materials, processes), toxics management, waste reduction and reuse, and water conservation and reclamation to solve local as well as national and international environmental problems.

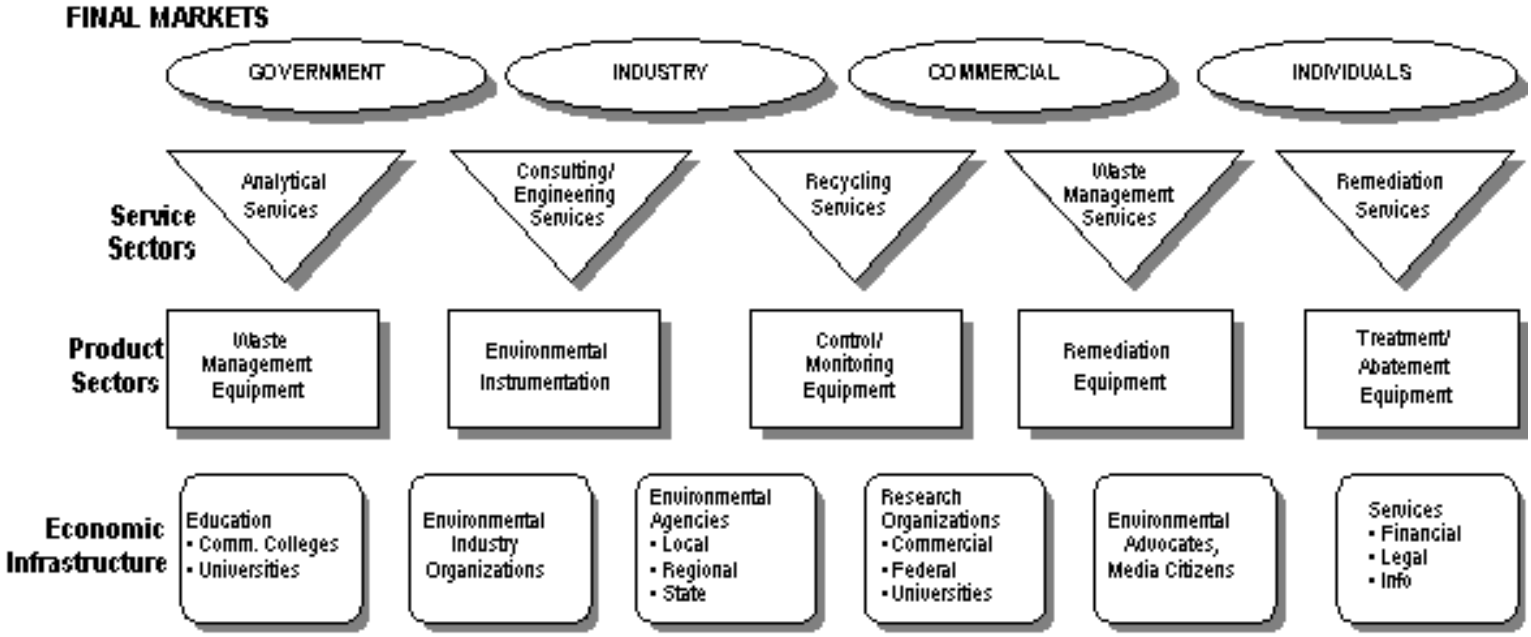
## VI. REQUIREMENTS FOR FUTURE GROWTH

The immediate challenge is to overcome structural regulatory obstacles undermining growth of existing technologies and companies. Key regulatory needs include: streamlining the number of approving bodies (reducing market fragmentation), moving away from site-specific regulation, developing technology certification programs, and moving toward incentive- and objective-based regulation.

The secondary challenge is to stimulate new environmental technologies and companies through: funding technology demonstration, reforming public procurement processes, ensuring access to low-cost manufacturing space, accelerating base clean-up, providing training linked to real jobs, and improving access to research.

## I. Components of the Environmental Industry Cluster

Figure 1
Bay Area Environmental Industry: Cluster Map




What is the environmental industry? Despite widespread interest in the environmental industry, there is remarkably little consensus about what specific sectors make up the industry, how large it is, or if in fact an "industry" exists. The industry is difficult to define:

Like other emerging industries (e.g., multimedia), distinct Standard Industry Classification codes do not yet exist for the environmental industry. Companies that make products with environmental applications or provide environmentally related services can be found in a broad range of industry classifications. Industries such as software, instruments, materials, and engineering services all include companies selling products and services that help the environment.

The environmental industry is as much a profession as it is an industry. Companies in a wide range of industriesfrom semiconductors to health care to agriculture to movie-makingemploy people to manage each business's effect on the environment. The majority of environmental expenditures are thus made internally as companies develop solutions to their specific environmental problems.

It is difficult to know where to draw the line. Are all businesses that produce products in an environmentally benign manner considered part of the environmental industry? Is there a difference between environmental companies and environmentally beneficial companies? Should new, less-toxic materials be counted as the environmental industry or the advanced materials industry?

For discussion purposes, this paper defines the environmental industry as "*companies that commercially sell products and services that mitigate or prevent detrimental effects on the current and future environment."*

Figure 2
Components of the Environmental Cluster Map

**SERVICE-ORIENTED BUSINESS**

*Waste management*--The largest and most mature environmental segment, waste management companies collect, transport, and dispose of waste for residences, commercial establishments, and industry. Dominated by large companies such as Waste Management, Browning-Ferris Industries, and Nor Cal Waste Systems.

*Recycling and resource recovery*--Such firms specialize in recycling waste such as paper, tires, aluminum, chemicals, and computers from individuals and businesses, e.g., Free Flow Packaging, Stamco, and Romic Chemical.

*Consulting and engineering services*--These firms provide technical and strategic advice to help companies comply with increasingly complex environmental laws. Some undertake large-scale infrastructure design and construction projects. Example companies: Bechtel, EMCON, SRI, CH2M Hill, and Woodward Clyde.

*Analytic services*--Companies that provide R&D, analysis and testing services. Examples include Columbia Analytic Services and a host of private labs.

**PRODUCT-ORIENTED BUSINESSES**

*Environmental instrumentation*--Companies that develop instruments for lab and non-lab environmental analysis. Leaders include large instrument and defense companies developing applications for environmental markets, e.g., Hewlett Packard, Varian, and Teledyne.

*Waste management equipment*--This broad category includes items such as landfill liners, waste storage container and tanks, waste compactors, protective suits, and radioactive waste containers.

*Control and monitoring equipment*--Equipment such as scrubbers and gas desulferization technology used by electric utilities and traditional manufacturing industries. It also includes sophisticated equipment to monitor pollutants.

*Treatment/abatement equipment*--Includes water treatment equipment and remediation equipment.

**ENVIRONMENTAL INDUSTRY INFRASTRUCTURE**

*Environmental research*--Commercial research organizations, national laboratories, and universities are part of the infrastructure to support environmental problem-solving.

*Environmental education/training*--In addition to its major universities, the Bay Area has extensive training resources at its community colleges for environmental technicians.

*Environmental advocacy*--The Bay Area has a long history of environmental awareness. Many environmental advocacy organizations have a large Bay Area presence e.g., the Environmental Defense Fund, Sierra Club, Greenpeace, the Silicon Valley Toxics Coalition, Citizens for a Better Environment, and Earth Island Institute.

*Specialized services*--Business service companies, including financial services, legal services, and information services, are developing specialized skills to serve environmental companies.

*Environmental agencies*--There are over 193 separate local, state, and federal regulatory districts in California.

*Media and citizens*--The media plays a key role in shaping citizens' perceptions of environmental risk.

*New environmental industry organizations*--In the last three years, new organizations played a facilitating role in developing and using new environmental technologies e.g., the Environmental Partnership (Joint Venture: Silicon Valley Network), Alameda Center for Environmental Technologies (Alameda Economic Development Advisory Board), BADCAT Environmental Technology Project (Bay Area Economic Forum), and Monterey Bay Science and Technology Center (UC-Santa Cruz).

## II. Industry Size and Growth

Figure 3
Bay Area Environmental Technology Cluster Employment

| Key Sectors | Employment 1993 | Employment Concentration | Average Earnings | A.A.G.R. 88-93 | Net change Emp. 88 - 93 |
|---|---|---|---|---|---|
| Total for all sectors | 10,406 | 133 | $41,594 | 1.0% | 482 |
| **Environmental Technology** | | | | | |
| Process control instruments (20%) | 554 | 159 | $44,620 | 6.0% | 141 |
| Blowers and fans (50%) | 343 | 61 | $37,740 | -14.6% | -411 |
| Analytical instruments (10%) | 258 | 322 | $51,660 | -2.2% | -30 |
| Service industry machinery, nec (10%) | 193 | 88 | $35,915 | 5.7% | 47 |
| Laboratory apparatus & furniture (15%) | 24 | 80 | $36,601 | -4.4% | -6 |
| **Environmental Services** | | | | | |
| Engineering services (7%) | 2,218 | 160 | $53,029 | 0.6% | 70 |
| Testing laboratories (40%) | 1,395 | 146 | $36,293 | 5.1% | 305 |
| Commercial physical research (5%) | 1,874 | 265 | $57,805 | 1.2% | 113 |
| Sanitary services, nec (75%) | 466 | 133 | $34,389 | -8.6% | -262 |
| Services, nec (20%) | 154 | 127 | $52,216 | 2.5% | 18 |
| **Wholesale Trade** | | | | | |
| Scrap and waste materials (100%) | 2,927 | 96 | $25,800 | 3.8% | 498 |

Source: MIG, Inc.; ES202 State Data Packages

Figure 3 provides a best-guess estimate of 12-county Bay Area employment in the environmental industry using traditional Standard Industry Classification code data.

*Approximately 10,000 People Employed*--Given the elusiveness of the environmental industry, estimates of its size vary widely. Collaborative Economics estimates conservatively that the environmental industry employs 10,000 people. Largest employers are scrap and waste materials (recycling), engineering services, and testing laboratories.

*Wages Above Average*--Wages in the environmental industry are, on average, 17% above the Bay Area industry average. The largest employer, scrap and waste materials, pays one-third below average, due to the lower-value added nature of the work and the prevalence of part-time workers.

*Specialization in Instrumentation and Services*--The Bay Area is specialized relative to the nation in environmental instrumentation and in environmental research, testing, and engineering services.

*1200 Companies*--A 1994 study by Environmental Intelligence identified 6,000 environmental companies in California. As a best-guess estimate, the Bay Area is home to 1,200 companies that consider themselves part of the environmental industry, representing 20% of the state total.

*Second Largest State Concentration*--The Bay Area has the second largest concentration of environmental companies in California, with Orange County ranking first and San Diego ranking third.

## III. Industry Evolution

Figure 4
Evolution of the Environmental Industry

| | Past<br>1970 - 1990 | Present<br>1990 - 1995 | Future<br>1995 - 2010 |
|---|---|---|---|
| **Industry Drivers** | Increasingly Strict Regulation and Enforcement | · Fear of Liability<br>· Consumer Green Awareness<br>· Closure of Toxic Bases<br>· Recession | · Bottom-Line Awareness<br>· Sustainability Movement<br>· Product/Service Alliances<br>· Regulatory Reform |
| **Annual Growth** | Double digit (10 - 20%) | Stunted (15 - 2%) | Single digit (5 - 9%) |
| **Industry Structure** | Fragmentation | Overcapacity<br>Consolidation / Acquisition | · International Alliances<br>· Large full-service firms<br>· Small niche players |
| **Market Orientation** | Regional | National | International |

| | | | |
|---|---|---|---|
| **Key Sectors** | · Waste Treatment<br>· Pollution Control<br>· Waste Disposal | · Clean up<br>· Recycling / resource recovery<br>· On-site services | · Pollution Prevention<br>· Alternate energy |

*Past (1970 to 1990*--The environmental industry barely existed until the U.S. Environmental Protection Agency was created in 1970. Through the 1970s and 1980s, a steady succession of national and then state legislation led to 15% average annual growth in the U.S. environmental industry.

In the Bay Area the industry grew to serve the region's regulated customers. A first wave of companies was started in the early 1970s. Most of these were either operating units of national companies (e.g., Emerson Electric, Romic, Ionics) or new environmental consulting companies. Only a few of these evolved to become large national players (EMCON, HLA).

The 1980s brought a second wave of companies that were more product-focused and technology-based than their predecessors. Today, most of these companies have less than 50 employees and less than $10 million in revenue; some are significantly smaller. By the close of the decade, the industry was characterized by excessive fragmentation--large numbers of small companies and a handful of large ones.

*Present (1990-1995--The last five years brought dramatic slowdown in growth of the environmental industry.* Nationally, growth plummeted from 15% in 1991 to 1-3% 1992, 1993, and 1994. In the Bay Area, employment fell 7% between 1991 and 1993. Factors responsible include the recession, excess capacity, slow remediation expenditures, increased sensitivity to the costs, and the administrative structure built up for regulation of environmental technology.

*Future (1995-2005--At a critical transition period, the environmental industry of the future will be shaped by a major paradigm shift toward pollution prevention.* In the words of U.S. EPA Administrator Carol Browner: "We must move away from end-of-the pipe regulation. We're going to focus on preventing pollution." The long-term growth in the environmental industry will not be in pollution clean-up or control, but in developing new materials, equipment, and production processes that cost-effectively prevent the formation of pollution. Other growth areas will focus on stopping depletion of natural resources and developing our economic communities in a manner that can be sustained over time.

Companies that succeed in the new paradigm will have a global outlook, develop multiple alliances, and develop or access cutting-edge proprietary technologies. Industry growth will remain in single digits.

## IV. Key Relationships

Teaming relationships with other companies and organizations have become central to the viability of most environmental companies.

Several types of alliances are important:

- *Alliances between service and product companies*--Small technology companies increasingly sell their products through larger engineering companies rather than directly to the customer.
- *Alliances with customers*--Companies must develop alliances with many kinds of customers: high-tech companies, governments, developers.
- *Alliances with financing organizations*--Foreign buyers increasingly require the environmental companies to bring the project funding to the table. Companies must work with international funding agencies, such as the World Bank, USAID, EBRD, the Export-Import Bank, or foreign government investors or lenders.
- *Alliances with research organizations*--Government research organizations and universities are important sources of technology and talent.

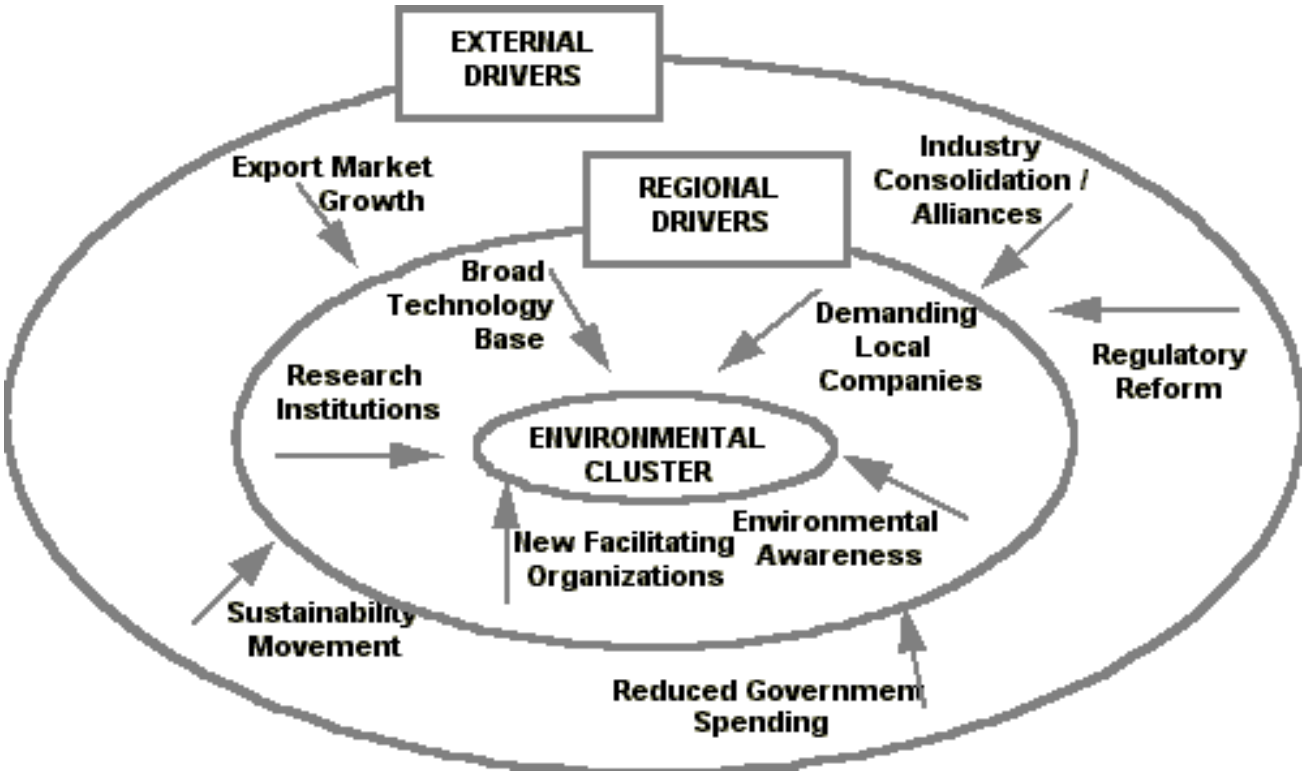
New regionally based organizations have sprung up to help companies make connections and troubleshoot regulatory issues. Figure 6 shows the focus and accomplishments of some of these new "intermediary" organizations.

Figure 6
New Bay Area Organizations Supporting Environmental Industry

| Organization | Affiliated With | Focus | Accomplishment (illustrative) |
|---|---|---|---|
| **Silicon Valley Environmental Partnership** | Joint Venture: Silicon Valley Network | Connect fledgling environment firms with partners, resources | Environmental Incubator with 25 firms |
| **Alameda Center for Environmental Technologies** | County of Alameda | "Downstream" technologies from labs, universities to businesses | Case advocacy for company on Alameda Naval Air Station |
| **Monterey Bay Science and Technology Center** | UC-Santa Cruz<br>CSU-Monterey Bay | Attract businesses and government agencies to Fort Ord Site | UCSC classes on remediation with Fort Ord Environmental Training Consortium |
| **BADCAT Environmental Technology Project** | Bay Area Economic Forum | Use innovative technologies on closing military bases in the region | Meetings with military and regulatory agencies |

## V. Future Opportunities

Figure 7
Driving Forces




*In the Bay Area, cautious optimism should prevail on the future of the environmental industry*. Real problems (see Section VI) and real opportunities exist side by side. The industry probably does not have the same potential as software, bioscience, and multimedia to become a major, driving Bay Area employer. Industry watchers can, however, envision job generation in a few key areas:

*Toxics management*--The need to clean-up closing military bases is creating a demand for services and equipment, albeit smaller and slower than expected. There is also a great need to clean privately held property in urban industrial areas.

*Environmental instrumentation*--Building on strengths in instrumentation for science and defense, the Bay Area can develop expertise in environmental instrumentation.

*Pollution prevention technologies*--To the degree that we can transform our R&D base and manufacturing process expertise into pollution prevention technologies, the Bay Area can profit from the paradigm shift.

*Waste reduction and reuse*--A cluster of businesses can develop to help businesses and communities reduce and reuse waste, e.g. materials recycling facilities, composting facilities, de-inking facilities, and products made from recycled materials. California law AB 939 will require even greater recycling and could stimulate materials going through use and recycling several times, all within the Bay Area.

*Water*--Permanent water shortage can lead to the development of Bay Area expertise in water conservation, reclamation, and quality. A goal should be elimination of all waste water discharge into the Bay. Universities and national laboratories can play a role in developing technologies to make this possible.

## Regional Drivers

*Broad and deep industry base*--The environmental industry builds on the technical know-how of the Bay Area's rich industry base. Companies are successfully applying sophisticated technology developed in other industriesbioscience, software, aerospace instrumentationto solve environmental problems. At this point, the industry is driven by applications of existing technology, rather than the development of brand new technologies.

*Research institutions*--The Bay Area's universities and laboratories have produced some important environmental products. State and federal policies governing research, development, and technology transfer will affect the future impact on industry of these institutions.

*Demanding global companies*--The fact that so many worldclass global companies call the Bay Area "home" means environmental companies are spurred to excellence by demanding customers. Satisfying the corporate headquarters can also give local companies a leg-up in servicing the corporation's other national and international operations.

*Environmental awareness and advocacy*--The Bay Area has vigilant environmental groups that raise public awareness of environmental challenges. While some brandish adversarial attitudes, many are interested in business-government-environmental dialogue and collaborative problem-solving.

*New facilitating organizations*--The Bay Area is home to several new organizations that help facilitate connections for environmental companies, and advocate on their behalf.

## Global Drivers

*Export market growth--The global market for environmental products and services is large and expanding.* By the end of the decade the world market is expected to exceed $400 billion per year (currently at $270 billion). While the United States dominated the industry in its early stages, Japan, Germany, France, and England are aggressively chasing export markets. The OECD estimates that the United States exports approximately 10% of its production.

*Regulatory reform*--Regulatory reform at the federal, state, and regional levels will affect the environmental industry. Likely, we will see increased debate over how we regulate industry, toward what ends, and at what cost.

*Consolidation and alliances*--To revitalize itself and globalize, this U.S. environmental industry will experience continued consolidation and forging of alliances.

*Sustainability/Pollution prevention movements*--The "green movement" worldwide is emphasizing pollution prevention and resource conservation as essential both for sustainable economies and communities.

# VI. Requirements for Future Growth

Figure 8
Infrastructure Strengths & Constraints

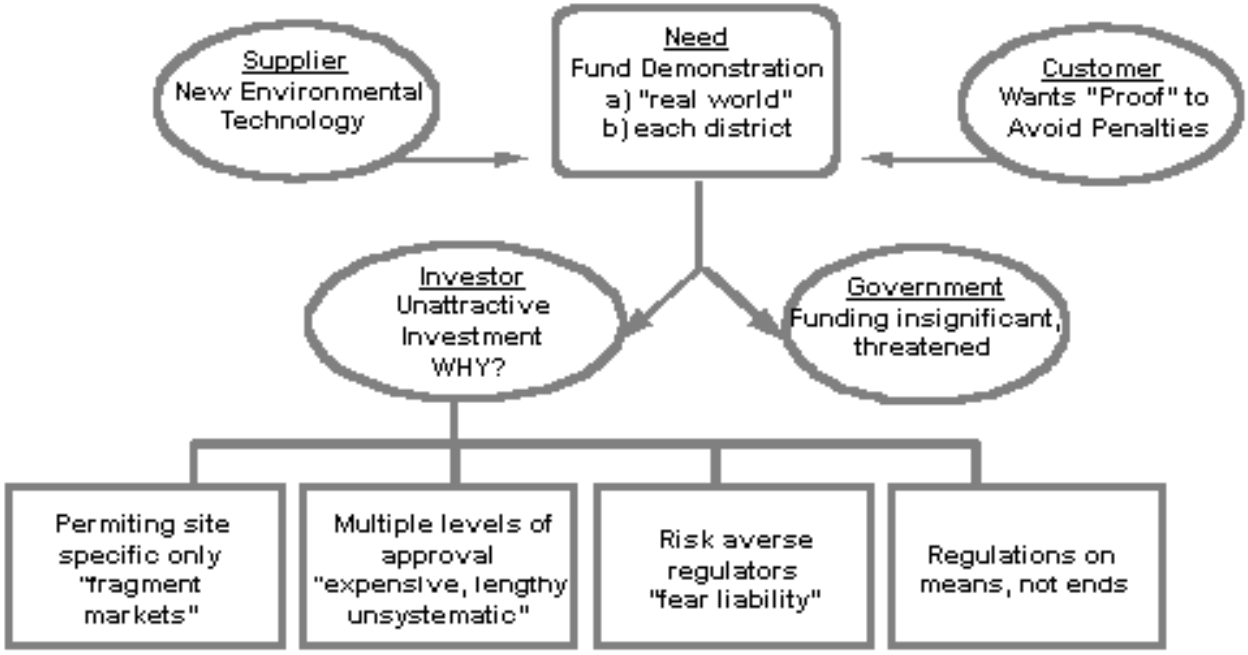
| | Strengths | Constraints |
|---|---|---|
| **Workforce / Education** | **Training of environmental technicians** | |
| **Technology** | **New organizations facilitating access to research** | **Bureaucratic, cultural barriers to "downstreaming" research** |
| **Capital** | **Potential access to private "angels"** | **· Investors don't have process certainty (a la FDA)**<br>**· Site-specific approval fragments market**<br>**· Lack of public funding for demonstration** |
| **Physical Infrastructure** | **Start-up "incubator" space in Silicon Valley, Alameda, Monterey**<br>**Availability of military bases** | **Access to low-cost land for manufacturing**<br>**Infrastructure limitations; constraints on military bases** |
| **Information Infrastructure** | | |
| **Tax and Fiscal Policy** | | |
| **Regulatory Environment** | | **· Many levels of regulatory approval (193 districts)**<br>**· Unsystematic process for approval**<br>**· Should regulate ends not means**<br>**· Inability to implement certification**<br>**· Slow and expensive permitting process** |
| **Quality of Life** | **Strong environmentalist tradition** | |
| **Networking** | **New organizations facilitating industry partnering, troubleshooting** | **· Some duplication of effort**<br>**· Need involvement of industry** |

*The major, most pressing constraints on the growth of California's environmental industry relate to the structure and nature of the regulatory system for environmental technologies.* To develop and sell a new environmental technology product, environmental companies must secure permits from regulatory agencies. California's process stands out among states in hindering the development of new environmental solutions.

*A chicken-and-egg syndrome has developed which stands in the way of new environmental solutions and new jobs, and is ceding environmental markets to foreign competition (see Figure 9).* Customers demand proof that a technology works and is approved for use before they will purchase it. To get approval of regulators and customers, environmental companies must invest in demonstrating that their technology works under "real world" conditions. Investors won't invest in development and demonstration of new technologies because the

regulatory process is long, unclear, expensive, and typically results in approval of a technology only in one specific site. This does not create a market large enough to earn a significant return on money and time invested. Other, non-regulatory government agencies are attempting to fund new technologies but this funding is insignificant and threatened.

Figure 9
Regulatory Structure Constraints (Environmental Industry "Chicken-and-Egg" Syndrome)




The following are key constraints to growth of the environmental industry:

## Regulatory Structure Fragments Market

A key reason capital is not flowing to environmental companies (one championed by venture capitalists and other financiers) is that the existing regulatory system creates an excessively fragmented market. New technologies typically have to get the approval of each regulatory district in which they will be sold. In California there are 193 separate regulatory districts. To compound this, approval/denial processes are typically long, expensive, and unsystematic. Financiers claim that only a single systematic approval process (i.e., a single large "market") can entice capital into the environmental industry.

## Funding Mechanisms for Technology Demonstration

Before a new technology can be used, the buyer, regulators and financiers demand that environmental technology suppliers demonstrate that their technology works under "real conditions." This step in the commercialization process is expensive and difficult to execute. Because of the regulatory/market fragmentation discussed above, separate testing demonstrations and performance verifications must often be done for each regulatory district.

## State and/or National Technology Certification Programs

Technology certification has been oft-touted as a means, however imperfect, of overcoming market fragmentation. In theory, one regulatory body (CALEPA) would evaluate and "certify" the performance of new environmental technologies; other state and local agencies would then accept this single agency's judgment. Political realties are, however, quite different. Each regulatory district generates revenue by issuing permits to sell or use environmental technology. The general desire to stimulate the environmental industry is likely to be undermined by the specific desire of nearly 200 regulatory bureaucracies to retain their power and single source of revenue.

## Incentive- and Objective-Based Regulation

When government passes laws, promulgates rules, sets specification standards and establishes permitting requirements, it often specifies a particular type of technology which must be used to meet an environmental goal. This approach blocks (or substantially discourages) the use of new technology that meets or exceeds the performance criteria of the "approved" technology. Also, regulatory standards tend to be driven by public perceptions of risk rather than on the basis of uniform criteria. Regulations are therefore vulnerable to arbitrary changes in policy.

## Networks to Promote Partnering

Most environmental technology companies tend to be small, under-funded, and little-known to the public and potential partners. They lack the resources and expertise to single-handedly commercialize the valuable technologies they control. Developing partnerships with other environmental companies and other commercial companies will be increasingly important for business success.

## Accelerate Base Clean-up and Improve Flexibility

The opportunity for military expenditures on base clean-up to stimulate development of the local remediation industry has proven attractive in theory, but elusive in practice. Most industry experts interviewed believe base cleanup will have an extremely limited effect on employment and growth of the local remediation industry. While the forecasted clean-up expenditures appear large, funds will be dispersed over a 10- to 30-year period. Moreover, the military's process for procuring remediation services is not focused on stimulating new innovative-technology firms. In the Bay Area, Mare Island may receive special approval as a demonstration and test site for new clean-up technologies.

## Reformed Public Procurement Processes

Historically, the public sector has stimulated the development of emerging industries (e.g., aerospace, bioscience) by serving as a first consumer of innovative technologies. Unfortunately, procurement processes typically don't allow this to be the case for the environmental industry. Procurement processes typically require competitive bidding, which forces innovative technology provider to wait for their competitors to catch up. The CEBO project documented that "government bureaucracies, as major consumers, use product

specification standards to slow acceptance of new technologies." This is sometimes due to legitimate concerns like fear of liability, but more often due to general risk aversion and commitment to the status quo.

## Low-Cost Manufacturing Space

Restricted availability of low-cost land and facilities is a barrier to retaining environmental firms as they evolve from product development and demonstration into manufacturing. As companies reach critical mass, they look outside the Bay Area for expansion/relocation. Tennessee and Texas are attractive. Not only do they have low-cost manufacturing space, but they are also recognized as having expeditious processes for securing permits for R&D, demonstration, and use of new technologies.

## Training Linked to Real Jobs

In the last five years, the Bay Area's community colleges and four-year continuing education institutions have developed programs to train technicians for environmental clean-up and handling of hazardous materials. There is an opportunity to better orchestrate training with industry demand; that is for training programs to train technicians to meet contractors' hiring schedules and skill needs. For example, to clean-up Fort Ord, the Monterey County Private Industry Council and UC-Santa Cruz are working with the clean-up contractors to train several cycles of technician-level students for real jobs. Another example is the UC Davis-Mare Island Initiative.

## Access to Research Base

The Bay Area is home to ahost of national laboratories and universities investing in advanced science and research with potential application to the environmental area. The ACET proposal estimates that UC Berkeley, Lawrence Livermore National Laboratory, and Sandia National Laboratory spend over $50 million per year for R&D on remediation technologies.

A key challenge is determining whether or not this research base can be used to create viable environmental technologies and viable businesses that serve real markets. The proposed Alameda Center for Environmental Technologies will serve a focal point for technology "push--assessing commercial viability and demand for science and research and assisting with the commercialization process."

While there are some important linkages between research organizations and the regional environmental industry, the universities and labs have not yet played a catalytic role in the industry's development as they did in some of the area's other technology-based industries (e.g., bioscience, semiconductors).

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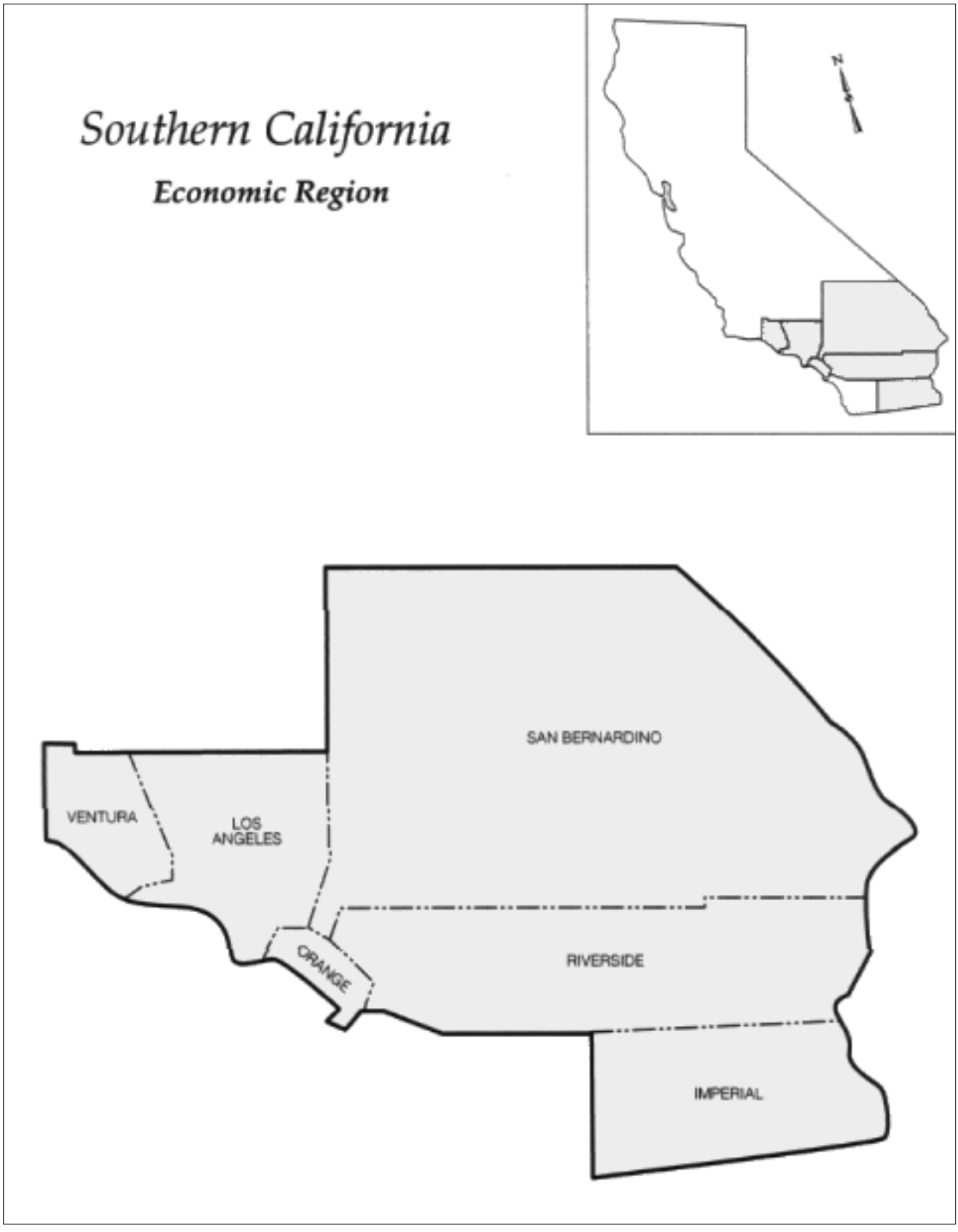

# SUMMARY

## BACKGROUND

The economic base analysis for the Southern California Region was intended to provide members of the State Strategy Panel and participants of the Regional Forum with a statistical picture of the region's economic structure and recent trends. The primary database for the study was ES202 provided by the Labor Market Information Division of the California Employment Development Department, supplemented by ES202 data from the Minnesota IMPLAN Group, Inc. At the time this project was initiated, the most accurate and consistent series of employment data available was for the period from 1991 to 1994. Since the State Strategy effort is intended to promote long-term economic monitoring at the state and regional levels, the relatively short time series presented in this study will be added to and further developed over time. The economic base analysis highlights three of the Southern California's many industrial clusters--Apparel, Entertainment, and Information. As examples of dynamic industrial activities that can serve as engines of regional growth, these three clusters were the subject of focus groups convened during the Regional Forum.

## KEY FINDINGS FROM THE ECONOMIC BASE ANALYSIS

### Changes in the Location of Employment

- Almost half of the jobs in California--49.3%--are found in the Southern California Region. In 1994, the six-county region generated more than 5 million jobs.
- In terms of employment base, the counties in this region cover a wide range from Los Angeles County with more than 3.1 million jobs (or 63.2% of the region's employment), to Imperial County with 38,400 jobs (or 0.8%).
- During the recessionary period from 1991-94, both Los Angeles County and second-largest Orange County loss jobs; all other counties in the region experienced a net increase in employment. Los Angeles County loss 9.7% of its employment base (-340,256 jobs), while Orange County's loss was 4.1% (-42,510 jobs). In comparison, employment for the state as a whole dropped by 4.3% over this same interval.
- San Bernardino experienced the largest absolute change (+7,278 jobs), while Imperial County experienced the largest percentage increase (+2.9%).
- The decline in Los Angeles County jobs meant slight shifts in the distribution of employment throughout the region. Los Angeles County's share of regional employment dropped by 2.1%, while the share of employment in the other five counties increased marginally. In terms of net growth, there is no evidence that any county is gaining jobs at a rate that is disproportionately high.

**Changes in Earnings**

- Los Angeles County had a private-sector payroll exceeding $23.3 billion in the 1st Quarter of 1994, or approximately two-thirds of the region's private-sector earnings. Adjusted for inflation, and comparing the 1st quarter payrolls in 1991 and 1994, Los Angeles, Orange, and Imperial Counties experienced decreases. The largest payroll increases occurred in Ventura County (+$25 million), followed by San Bernardino County (+$21 million).
- In 1994, Los Angeles County's share of the regional payroll was 66.4%, while its share of the region's employment was 63.2%. The high earnings-to-jobs ratio (105.1) indicates that Los Angeles County has a concentration of higher paying jobs. Orange County also had a high earnings-to-job ratio. In contrast, this ratio is 53.1 in the case of Imperial County.

**Employment by Sector**

- The distribution of employment across industrial categories presents an interesting picture. On the one hand, there appears to be a wide variation between urban and rural areas of the region. For example, about 40% of Imperial County's employment is in the agricultural sector, while less than 1% of Los Angeles County's employment is found in agriculture. The high percentage of agriculture jobs in Imperial County has a major effect on the character of its overall economic life. At the same time, even a small percentage in Los Angeles County translates into substantial absolute numbers. Thus, there are 21,479 agricultural jobs in Los Angeles County compared to 19,530 in Ventura County (which has the second highest number of ag. jobs) and 15,622 in Imperial County.
- By far, the largest category of employment in Los Angeles County (31%) is business and other services which employs more than 982,000 workers. This sector includes motion pictures and tourism.
- Los Angeles and Orange Counties exhibit similar profiles in their mix of jobs. Both have percentages of manufacturing and financial service (FIRE) jobs that exceed the regional average. In San Bernardino County, the transportation, communication, and utilities sector stands out as a disproportionately large sector, while the construction sector in Riverside County is larger than the regional norm.
- Not all economic sectors performed the same during the 1991-94 recessionary period. Agricultural employment grew significantly in Ventura County (+20.2%), moderately in San Bernardino County (+5.3%), but declined everywhere else. Manufacturing employment declined in four of the six counties, but grew in Riverside and Imperial Counties. Two sectors--business services and transportation, communications, and utilities--experienced the most generalized growth. All of the counties, except Los Angeles, showed net employment gains in these two sectors.

**Leading Industries**

- In 1994, five of the top industries in the region were related to services, including hospitals (158,543 jobs) and medical offices and clinics (93,481 jobs). Personnel

supply services and miscellaneous business services together employed more than 243,000 persons. Motion picture production and services is typically classified as a "service" industry and was the fifth highest ranking industry in the Southern California region.

- On the list of 30 leading industries, there are five manufacturing industries. Aircraft and parts; search and navigation equipment; and electronic components and accessories are all representative of the region's high-technology manufacturing base. Women's and misses's outerwear, as a single industry within the larger apparel cluster, is also a major employer and had more than 73,200 jobs in 1994. The makers of miscellaneous plastics products employed another 40,600 people, supplying a diverse array of inputs to the region's manufactures.
- Also prominent on the list of top employers are professional services, including legal services, management and public relations, engineering and architectural services, accounting and bookkeeping services, computer and data processing services, and research and testing services. Collectively these businesses employed more than 286,000 persons in 1994. Three industries from the FIRE sector are also listed among the top 30. Commercial banks, real estate agents and managers, and insurance agents and brokers together accounted for almost 166,000 employees.

**Largest Net Gains in Employment**

- Between 1991 and 1994, the largest net gain in employment was experienced by firms supplying personnel services. Their employment increased by more than 24,400. Another fast-growing industry was mortgage banking which increased by 13,300 employees.
- As a group, health care services, also fared well during the 1991-94 period. The combined growth of medical and dental offices, nursing and personal care facilities, home health care services, and allied health services produced a net gain of more than 17,500 jobs.
- Job increases that occurred in industries belonging to the apparel and entertainment clusters attest to the vitality of these activities. There was a net gain of more than 6,300 jobs in motion picture production and distribution. Four industries associated with the apparel cluster--knitting mills, textile finishing, men's furnishings, and apparel wholesale--each had significant job growth, and together added almost 7,200 jobs. In both cases, the growth occurred in different segments of the cluster which indicates a level of robustness throughout the production chain.

**Comparison of Economic Performance at the Regional and State Levels**

By comparing Southern California's economic performance against the state, we can identify regional activities and trends that are running counter to those of the larger economy. It provides one set of signals about the types of industries that might have a competitive advantage (or disadvantage) by virtue of its location in the region. And, like all indicators, they suggest directions for continued monitoring and further inquiry.

- There were a number of industries that registered employment growth at both the regional and state levels between 1991 and 1993, but grew faster in the Southern

California Region. The most significant industry fitting this pattern was drug manufacture (SIC 283) which increased by 2,053 in Southern California, thus accounting for approximately half of this industry's job growth throughout the state.

- Four industries related to the apparel cluster also grew relatively more quickly at the regional level than at the state level: broad woven (wool) fabrics, textile finishing, leather tanning and finishing, and hats and millinery.
- In some industries, employment grew in Southern California while the state showed overall decline. This pattern characterized two segments of the transportation sector--intercity bus transportation, as well as ocean-going foreign freight transportation. Other industries where regional employment increased in the face of statewide decreases included: miscellaneous publishing; jewelry and plated ware; paperboard; yarn and thread; watches, clocks and parts; and stone products.
- In some industries, employment declined at the regional level, despite the fact that the state as a whole registered employment growth. In this category were several industries dependent on fiscal health, such as school buses, local and suburban transit, and educational services. Other industries falling into this category were computer and data processing services and a diverse group of manufacturers (e.g., beverages, toys and sporting goods, and office furniture).

***Three industry clusters were featured at the Southern California Regional Forum: Apparel, Entertainment, and Information Technology.***

**Apparel**

- The apparel cluster is highly concentrated in Southern California. With almost 134,000 workers, this region contained more than 78% of the state's apparel jobs. In the areas of textiles and footwear, the region's share of employment reached 87% and 93%, respectively.
- Jobs in the apparel cluster are found in all counties within the region. However, the highest percentage is found in Los Angeles County. In 1993, more than 86% of the apparel cluster (115,500 jobs) was located in Los Angeles, followed by Orange County with slightly more than 9% or 12,500 jobs.
- While most of the jobs were in the manufacture of clothing and accessories (96,000 jobs), there were significant numbers of jobs in other areas, such as textiles (9,100 jobs), footwear production (3,200 jobs), and distribution (25,500 jobs).
- Average 1993 earnings for the cluster were relatively low at $20,638 compared to an average of $29,484 across all industries. Within the cluster, the apparel distribution component was the highest paying ($33,956), followed by textiles ($22,169).

**Entertainment**

- In 1993, the entertainment cluster accounted for an estimated 162,000 jobs in Southern California. The region has a clear specialization in entertainment with approximately 70% of the state's entertainment jobs.

- Within the region, the entertainment jobs are concentrated in Los Angeles County. The employment count in Los Angeles County was greater than 141,300 which amounted to an 87% share of the region's entertainment cluster. Orange County had an 8.7% share of the cluster(14,100 jobs) and the other four counties had less than 2% each.
- At the core of the cluster are activities related to the production of entertainment, which include motion picture and videos, theatrical productions and other forms of live performance, and entertainment in the form of software. Some 113,000 workers in the region were engaged in entertainment production in 1993. In addition, sizeable numbers were involved in publishing and printing related to entertainment (17,500 jobs) and entertainment distribution (15,800 jobs).
- Jobs in the entertainment cluster as a whole are well paid. Annual earnings averaged almost $47,600 per employee in 1993. Variation within the cluster ranged from $35,500 for printing and publishing to $53,900 for entertainment production.

**Information Technology**

- The information technology cluster contained an estimated 143,400 jobs in 1993. Approximately 38% of the state's information employment was found in Southern California.
- The densest concentration of information employment covers a two-county area. Los Angeles and Orange Counties together had almost 125,000 information jobs, or an 87% share of the regional total. Combined with another 9,400 jobs in Ventura County, the information cluster forms a corridor along the coast.
- The largest number of jobs are found in the information hardware and transmission components of the cluster. However, the highest concentration of jobs is found in information systems management, and data processing. Almost half the state's employment in this field can be found in the Southern California region.
- Average 1993 earnings in the information cluster--$46,354--was 1-1/2 times the average for all industries in the region. Within the cluster, average earnings ranged from $39,823 for communications hardware to $51,313 for software.

**Comparison of the Three Industry Clusters**

- Each of the clusters differed in the type of employment change experienced between 1991 and 1993. The entertainment cluster grew during this period. The apparel cluster lost jobs, but not as much as the regional economy overall. The information cluster, meanwhile, experienced a sharper drop in employment than the regional economy, reflecting both the effects of cutbacks in Federal defense expenditures and corporate downsizing to achieve a leaner competitive position.
- In each of the clusters, changes in payroll were favorable (even after adjustment for inflation). In the entertainment cluster, payroll growth outpaced employment growth. In the apparel and information clusters, payrolls declined less than employment. The upshot is that average earnings for workers in these three clusters is generally moving upward.

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- How many jobs are located in the Southern California region, and how are they distributed across the counties?
- How did employment levels fare during the 1991-94 recession period?

**TABLE 1**
**Economic Overview of the Southern California Region And Recent Changes: EMPLOYMENT**

| County | Avg. Quarterly Employment 1991 | Avg. Quarterly Employment 1994 | Net Change Employment 1991-94 | Pct. Change Employment 1991-94 |
|---|---|---|---|---|
| Ventura | 199,191 | 203,837 | 4,646 | 2.3% |
| Los Angeles | 3,504,504 | 3,164,248 | (340,256) | -9.7% |
| Orange | 1,037,848 | 995,338 | (42,510) | -4.1% |
| San Bernadino | 324,962 | 332,240 | 7,278 | 2.2% |
| Riverside | 265,627 | 272,317 | 6,690 | 2.5% |
| Imperial | 37,310 | 38,400 | 1,090 | 2.9% |
| Region | 5,369,442 | 5,006,380 | (363,062) | -6.8% |
| California | 10,597,473 | 10,144,936 | (452,537) | -4.3% |

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Dept.

- What level of earnings is generated by the county and regional economies?
- How was was payroll affected during the 1991-94 period, and how did payroll changes vary by county?

**TABLE 3**
**Economic Overview of the Southern California Region And Recent Changes: PAYROLL**

| Description | Avg. Qrtly Payroll 1991 ($mil) | Avg. Qrtly Payroll 1991 Adj* ($mil) | Avg. Qrtly Payroll 1994 ($mil) | Net Change Payroll 1991-94 | Pct. Change Payroll 1991-94 |
|---|---|---|---|---|---|
| Ventura | 1,157 | 1,233 | 1,259 | 25 | 2.0% |
| Los Angeles | 24,249 | 25,861 | 23,363 | (2,499) | -9.7% |
| Orange | 6,912 | 7,372 | 7,148 | (224) | -3.0% |
| San Bernadino | 1,718 | 1,833 | 1,854 | 21 | 1.2% |
| Riverside | 1,309 | 1,396 | 1,403 | 7 | 0.5% |

| | | | | | |
|---|---|---|---|---|---|
| Imperial | 135 | 144 | 143 | (1) | -0.4% |
| Region | 35,480 | 37,839 | 35,169 | (2,669) | -7.1% |
| California | 69,001 | 74,988 | 71,429 | (3,559) | -4.7% |

* Adjusted to 1994 dollars using the Consumer Price Index.

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department

- What proportion of the region's payroll is located in the various counties?
- Have there been shifts in the pattern of earnings within the region?

**TABLE 4**
**Economic Overview of the Southern California Region and Recent Changes:**
**DISTRIBUTION OF PAYROLL**

| Description | % Share of Regional Payroll 1991 | % Share of Regional Payroll 1994 | Net Change in Share of Payroll 1991-94 | Index*: Share of Payroll to Share of Jobs 1994 |
|---|---|---|---|---|
| Ventura | 3.3% | 3.6% | 0.3% | 87.9 |
| Los Angeles | 68.3% | 66.4% | -1.9% | 105.1 |
| Orange | 19.5% | 20.3% | 0.8% | 102.2 |
| San Bernadino | 4.8% | 5.3% | 0.4% | 79.4 |
| Riverside | 3.7% | 4.0% | 0.3% | 73.4 |
| Imperial | 0.4% | 0.4% | 0.0% | 53.1 |
| Region | 100.0% | 100.0% | | |

* Index compares the county's share of payroll to its share of jobs. Values less than 100 mean that the area's job account for a disproportionately low share of regional earnings. On the other hand, values greater than 100 mean that the area's jobs are paid better as a whole.

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department

- What is the breakdown of employment by the major economic sectors?

**TABLE 5**
**Employment by Sector for the Region, 1st Quarter 1994**

| | Ventura | Los Angeles | Orange | San Bernardino | Riverside | Imperial | REGION |
|---|---|---|---|---|---|---|---|
| Agriculture | 19,530 | 21,479 | 18,097 | 7,668 | 19,297 | 15,622 | 101,693 |
| | 9.6% | 0.7% | 1.8% | 2.3% | 7.1% | 40.7% | 2.0% |
| Mining | 1,983 | 5,480 | 864 | 598 | 558 | 550 | 10,033 |
| | 1.0% | 0.2% | 0.1% | 0.2% | 0.2% | 1.4% | 0.2% |
| Construction | 9,362 | 99,550 | 45,050 | 17,137 | 19,228 | 1,413 | 191,740 |
| | 4.6% | 3.1% | 4.5% | 5.2% | 7.1% | 3.7% | 3.8% |
| Nondurable Manufacture | 8,976 | 282,766 | 67,494 | 17,200 | 11,789 | 1,134 | 389,359 |
| | 4.4% | 8.9% | 6.8% | 5.2% | 4.3% | 3.0% | 7.8% |
| Durable Manufacture | 20,790 | 360,755 | 137,204 | 31,689 | 24,005 | 790 | 575,233 |
| | 10.2% | 11.4% | 13.8% | 9.5% | 8.8% | 2.1% | 11.5% |
| Transp/Comm/Utilities | 10,959 | 196,251 | 38,008 | 24,802 | 10,840 | 1,474 | 282,334 |
| | 5.4% | 6.2% | 3.8% | 7.5% | 4.0% | 3.8% | 5.6% |
| Wholesale | 11,696 | 250,845 | 80,982 | 23,139 | 11,610 | 1,939 | 380,211 |
| | 5.7% | 7.9% | 8.1% | 7.0% | 4.3% | 5.0% | 7.6% |
| Retail | 43,241 | 558,041 | 198,323 | 90,027 | 73,059 | 8,104 | 970,795 |
| | 21.2% | 17.6% | 19.9% | 27.1% | 26.8% | 21.1% | 19.4% |
| Finance/Insur/Real Estate | 13,023 | 252,665 | 98,309 | 17,079 | 17,168 | 1,062 | 399,306 |
| | 6.4% | 8.0% | 9.9% | 5.1% | 6.3% | 2.8% | 8.0% |
| Personal Svcs | 7,467 | 139,803 | 49,838 | 15,327 | 15,884 | 1,013 | 229,332 |
| | 3.7% | 4.4% | 5.0% | 4.6% | 5.8% | 2.6% | 4.6% |
| Bus/Other Services | 56,233 | 982,431 | 256,338 | 86,111 | 67,295 | 5,060 | 1,453,468 |
| | 27.6% | 31.0% | 25.8% | 25.9% | 24.7% | 13.2% | 29.0% |
| Not Classified | 577 | 14,182 | 4,831 | 1,463 | 1,584 | 159 | 22,796 |
| | 0.3% | 0.4% | 0.5% | 0.4% | 0.6% | 0.4% | 0.5% |
| Total | 203,837 | 3,164,248 | 995,338 | 332,240 | 272,317 | 38,400 | 5,006,380 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California EDD.

- Did the sectors expand or contract during a recent time period?

**TABLE 6**
**Change in Sectoral Employment, 1991-94**

| | Ventura | Los Angeles | Orange | San Bernardino | Riverside | Imperial | REGION |
|---|---|---|---|---|---|---|---|
| Agriculture | 20.2% | -7.6% | -4.7% | 5.3% | -5.4% | -2.3% | -0.4% |
| Mining | -24.2% | -30.0% | -36.3% | -21.1% | -28.1% | -24.2% | -28.6% |
| Construction | -24.3% | -24.0% | -14.8% | -25.6% | -18.0% | -19.5% | -21.6% |
| Nondurable Mfg | -2.9% | -16.5% | -11.9% | -1.1% | 6.2% | 5.3% | -13.8% |
| Durable Mfg | -12.0% | -28.0% | -17.4% | -10.8% | 5.4% | 44.7% | -23.3% |
| Transp/Utilities | 5.4% | -5.0% | 8.1% | 17.0% | 0.3% | 32.9% | -1.0% |
| Wholesale | 3.5% | -8.7% | -3.0% | 17.0% | -3.5% | -13.9% | -5.8% |
| Retail | -4.3% | -8.0% | -3.1% | 4.6% | 6.8% | 18.1% | -4.6% |
| FIRE | 4.7% | -8.3% | -1.0% | 0.8% | 12.6% | 13.1% | -5.0% |
| Personal Svcs | 1.7% | -9.0% | 2.1% | 9.1% | 10.9% | -10.8% | -4.2% |
| Bus/Other Svcs | 22.8% | -2.3% | 0.4% | 2.3% | 2.4% | 1.3% | -0.5% |
| Total | 2.3% | -9.7% | -4.1% | 2.2% | 2.5% | 2.9% | -6.8% |

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department.

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- Which industries provide the most jobs in the region?

**TABLE 7**
**Industries* with the Largest Employment in the Region, 1994**
**Highlighted industries** are related to the Apparel, Entertainment, and/or Information Cluster**

| SIC | Description | Regional Employ. | Cluster Related |
|---|---|---|---|
| 806 | Hospitals | 158,543 | |
| 736 | Personnel supply services | 138,865 | |
| 738 | Misc. business services | 104,254 | |
| 801 | Offices & clinics of medical doctors | 93,481 | |
| 781 | Motion picture prod. & services | na | ** |
| 372 | Aircraft & parts | 85,586 | |
| 233 | Women's & misses' outerwear | 73,205 | ** |
| 602 | Commercial banks | 72,063 | |
| 701 | Hotels & motels | 70,369 | |
| 421 | Trucking & courier services, except air | 65,997 | |
| 811 | Legal services | 62,603 | |
| 874 | Management & public relations | 59,538 | ** |
| 805 | Nursing & personal care facilities | 58,274 | |
| 799 | Misc. amusement & recreation svcs | 56,904 | |
| 653 | Real estate agents & managers | 53,974 | |
| 381 | Search & navigation equipment | na | ** |
| 504 | Professional & commercial equip-whlsle | 48,109 | ** |
| 871 | Engineering & architectural services | 44,259 | |
| 481 | Telephone communications | 42,948 | ** |
| 872 | Accounting & bookkeeping services | 42,699 | |
| 737 | Computer & data processing services | 42,476 | ** |
| 308 | Misc. plastics products, nec | 40,658 | |
| 641 | Insurance agents, brokers & services | 39,889 | |
| 734 | Services to buildings | 38,394 | |
| 506 | Electrical goods-wholesale | 38,138 | ** |
| 451 | Air transportation, scheduled | na | |
| 822 | Colleges & universities | 34,946 | |
| 873 | Research & testing services | 34,827 | |

| | | | |
|---|---|---|---|
| 802 | Offices & clinics of dentists | 34,600 | |
| 367 | Electronic components & accessories | 32,809 | |
| | All industries | 5,006,380 | |

* Excludes industries in the retail trade sectors.

"na" indicates potentially confidential data which has been suppressed.

Source: Based on ES202 data for 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Department

- Which industries gained the largest number of jobs during a recent period?

**TABLE 8**
**Southern California Industries* Reporting the Largest Net Gains in Employment, 1991-94**
**Highlighted industries** are related to the Apparel, Entertainment, and/or Information Cluster**

| SIC | Description | Net Change 1991-94 | Cluster Related |
|---|---|---|---|
| 736 | Personnel supply services | 24,405 | |
| 616 | Mortgage bankers & brokers | 13,303 | |
| 874 | Management & public relations | 7,639 | |
| 805 | Nursing & personal care facilities | 6,450 | |
| 836 | Residential care | 4,490 | |
| 782 | Motion picture distribution & services | 4,004 | ** |
| 738 | Misc. business services | 3,876 | |
| 808 | Home health care services | 3,744 | |
| 799 | Misc. amusement, recreation svcs | 3,243 | |
| 513 | Apparel, piece goods, notions-wholesale | 3,219 | ** |
| 733 | Mailing, reproduction services | 2,743 | |
| 804 | Offices of other health practitioners | 2,333 | |
| 781 | Motion picture production & services | 2,310 | ** |
| 283 | Drugs | 2,298 | |
| 512 | Drugs & other sundries-wholesale | 2,247 | |
| 802 | Offices & clinics of dentists | 2,200 | |
| 835 | Child day care services | 2,102 | |
| 734 | Services to buildings | 2,048 | |
| 226 | Textile finishing, excpt wool | 1,757 | ** |
| 422 | Public warehousing & storage | 1,690 | |
| 801 | Clinics & offices of medical doctors | 1,634 | |
| 411 | Local & suburban transportation | 1,566 | |
| 839 | Social services, nec | 1,526 | |

| | | | |
|---|---|---|---|
| 653 | Real estate agents & managers | 1,481 | |
| 076 | Farm labor & mgt. services | 1,361 | |
| 809 | Health & allied services, nec | 1,217 | |
| 232 | Men's & boy's furnishings | 1,213 | ** |
| 628 | Securities & commodity services | 1,085 | |
| 225 | Knitting mills | 977 | ** |
| 621 | Security brokers & dealers | 956 | |
| 371 | Motor vehicles & equipment | 924 | |

* Excludes industries in the retail trade sector.

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Dept.

- Among industries that expanded in employment during 1991-93, which of them experienced relatively higher growth at the regional level than at the state level?

**TABLE 9**
**Industries in which Regional Growth Exceeded State Growth, 1991-93**

| | | 6-County S. California Region | | | | State | | | |
|---|---|---|---|---|---|---|---|---|---|
| SIC | Description | Employ. 1991 | Employ. 1993 | Net Change | Percent Change | Employ. 1991 | Employ. 1993 | Net Change | Percent Change |
| 283 | Drugs | 9,135 | 11,188 | 2,053 | 22.5% | 21,732 | 25,989 | 4,257 | 19.6% |
| 226 | Textile finishing, excpt wool | 1,792 | 3,271 | 1,479 | 82.5% | 1,886 | 3,388 | 1,502 | 79.6% |
| 104 | Gold and silver ores | 688 | 2,020 | 1,332 | 193.6% | 1,863 | 2,091 | 228 | 12.2% |
| 352 | Farm and garden machinery | 524 | 1,334 | 810 | 154.6% | 2,310 | 3,392 | 1,082 | 46.8% |
| 355 | Special industry machinery | 3,800 | 4,475 | 675 | 17.8% | 11,188 | 12,320 | 1,132 | 10.1% |
| 348 | Ordnance and accessories | 715 | 1,312 | 597 | 83.5% | 1,233 | 1,613 | 380 | 30.8% |
| 092 | Fish hatcheries & preserves | 75 | 571 | 496 | 661.3% | 170 | 224 | 54 | 31.8% |
| 393 | Musical instruments | 794 | 1,159 | 365 | 46.0% | 1,525 | 2,025 | 500 | 32.8% |
| 489 | Communication svcs, nec | 1,205 | 1,471 | 266 | 22.1% | 3,816 | 4,072 | 256 | 6.7% |
| 235 | Hats, caps, and millinery | 226 | 382 | 156 | 69.0% | 403 | 620 | 217 | 53.8% |
| 223 | Broadwvn fabric mills, wool | 85 | 227 | 142 | 167.1% | 224 | 283 | 59 | 26.3% |
| 301 | Tires and inner tubes | 199 | 339 | 140 | 70.4% | 1,111 | 1,161 | 50 | 4.5% |
| 286 | Industrial organic chemicals | 585 | 706 | 121 | 20.7% | 3,691 | 3,991 | 300 | 8.1% |
| 311 | Leather tanning and finishing | 115 | 226 | 111 | 96.5% | 397 | 444 | 47 | 11.8% |

Source: Based on ES202 data from the Minnesota Implan Group, 1991, 1993

- Which industries grew in the region, while declining in the state?

**TABLE 10**
**Industries in which Employment Grew in the Region, but Declined in the State, 1991-93**

| | | 6-County S. California Region | | | | State | | | |
|---|---|---|---|---|---|---|---|---|---|
| SIC | Description | Employ. 1991 | Employ. 1993 | Net Change | Percent Change | Employ. 1991 | Employ. 1993 | Net Change | Percent Change |
| 413 | Intercity & rural bus transp. | 684 | 977 | 293 | 42.8% | 1,462 | 1,090 | -372 | -25.4% |
| 441 | Ocean foreign freight transp. | 852 | 1,057 | 205 | 24.1% | 4,163 | 3,464 | -699 | -16.8% |
| 274 | Miscellaneous publishing | 4,560 | 4,707 | 147 | 3.2% | 10,203 | 9,599 | -604 | -5.9% |
| 391 | Jewelry, plated ware | 2,966 | 3,092 | 126 | 4.2% | 4,123 | 4,035 | -88 | -2.1% |
| 263 | Paperboard mills | 791 | 908 | 117 | 14.8% | 1,312 | 1,170 | -142 | -10.8% |
| 228 | Yarn and thread mills | 326 | 416 | 90 | 27.6% | 1,035 | 1,005 | -30 | -2.9% |
| 387 | Watches, clocks, & parts | 212 | 277 | 65 | 30.7% | 433 | 324 | -109 | -25.2% |
| 328 | Cut stone and stone products | 666 | 717 | 51 | 7.7% | 1,230 | 1,229 | -1 | -0.1% |
| 287 | Agricultural chemicals | 674 | 692 | 18 | 2.7% | 3,467 | 3,392 | -75 | -2.2% |

Source: Based on ES202 data from the Minnesota Implan Group, 1991, 1993

- Which industries declined at the regional level, while employment increased in the state as a whole?

**TABLE 11**
**Industries in which Employment Declined in the Region, but Grew in the State, 1991-93**

| | | 6-County S. California Region | | | | State | | | |
|---|---|---|---|---|---|---|---|---|---|
| SIC | Description | Employ. 1991 | Employ. 1993 | Net Change | Percent Change | Employ. 1991 | Employ. 1993 | Net Change | Percent Change |
| 737 | Computer & data proc. svcs | 46,984 | 42,082 | -4902 | -10.4% | 114,329 | 124,858 | 10,529 | 9.2% |
| 208 | Beverages | 8,658 | 8,095 | -563 | -6.5% | 28,850 | 29,167 | 317 | 1.1% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 411 | Local & suburban transp. | 8,438 | 7,918 | -520 | -6.2% | 18,136 | 18,368 | 232 | 1.3% |
| 394 | Toys and sporting goods | 7,971 | 7,527 | -444 | -5.6% | 11,977 | 12,121 | 144 | 1.2% |
| 829 | Schools & educ. svcs, nec | 11,285 | 10,924 | -361 | -3.2% | 21,717 | 22,219 | 502 | 2.3% |
| 899 | Services, nec | 3,522 | 3,217 | -305 | -8.7% | 6,305 | 6,377 | 72 | 1.1% |
| 415 | School buses | 5,103 | 4,817 | -286 | -5.6% | 7,673 | 8,129 | 456 | 5.9% |
| 252 | Office furniture | 5,783 | 5,535 | -248 | -4.3% | 6,773 | 7,330 | 557 | 8.2% |
| 206 | Sugar & confectionery prod. | 2,451 | 2,397 | -54 | -2.2% | 10,247 | 11,584 | 1,337 | 13.0% |
| 316 | Luggage | 973 | 922 | -51 | -5.2% | 1,180 | 1,219 | 39 | 3.3% |
| 273 | Books | 2,092 | 2,066 | -26 | -1.2% | 7,041 | 7,384 | 343 | 4.9% |

Source: Based on ES202 data from the Minnesota Implan Group, 1991, 1993

- How is employment within the Apparel Cluster distributed across the counties?

**TABLE 12**
**Spatial Distribution of Jobs in the Apparel Cluster, 1993**

| | Ventura | Los Angeles | Orange | San Bernardino | Riverside | Imperial | Region | State | Region % of State |
|---|---|---|---|---|---|---|---|---|---|
| Textiles & fabric finishing | 52 | 7,060 | 1,804 | 193 | 15 | 0 | 9,123 | 10,481 | 87.0% |
| Apparel | 1,368 | 76,635 | 5,049 | 598 | 193 | 312 | 84,155 | 107,887 | 78.0% |
| Misc. apparel & accessories | 204 | 9,457 | 1,368 | 438 | 394 | 2 | 11,862 | 15,174 | 78.2% |
| Footwear | 2 | 1,408 | 1,744 | 55 | 0 | 0 | 3,209 | 3459 | 92.8% |
| Distribution | 919 | 20,898 | 2,541 | 784 | 251 | 64 | 25,457 | 34,096 | 74.7% |
| CLUSTER TOTAL | 2,545 | 115,457 | 12,507 | 2,068 | 853 | 378 | 133,806 | 171,097 | 78.2% |
| | 1.9% | 86.3% | 9.3% | 1.5% | 0.6% | 0.3% | 100.0% | | |

Source: Based on ES202 data from the Minnesota Implan Group, 1993

**Components of the Apparel Cluster by SIC Code**

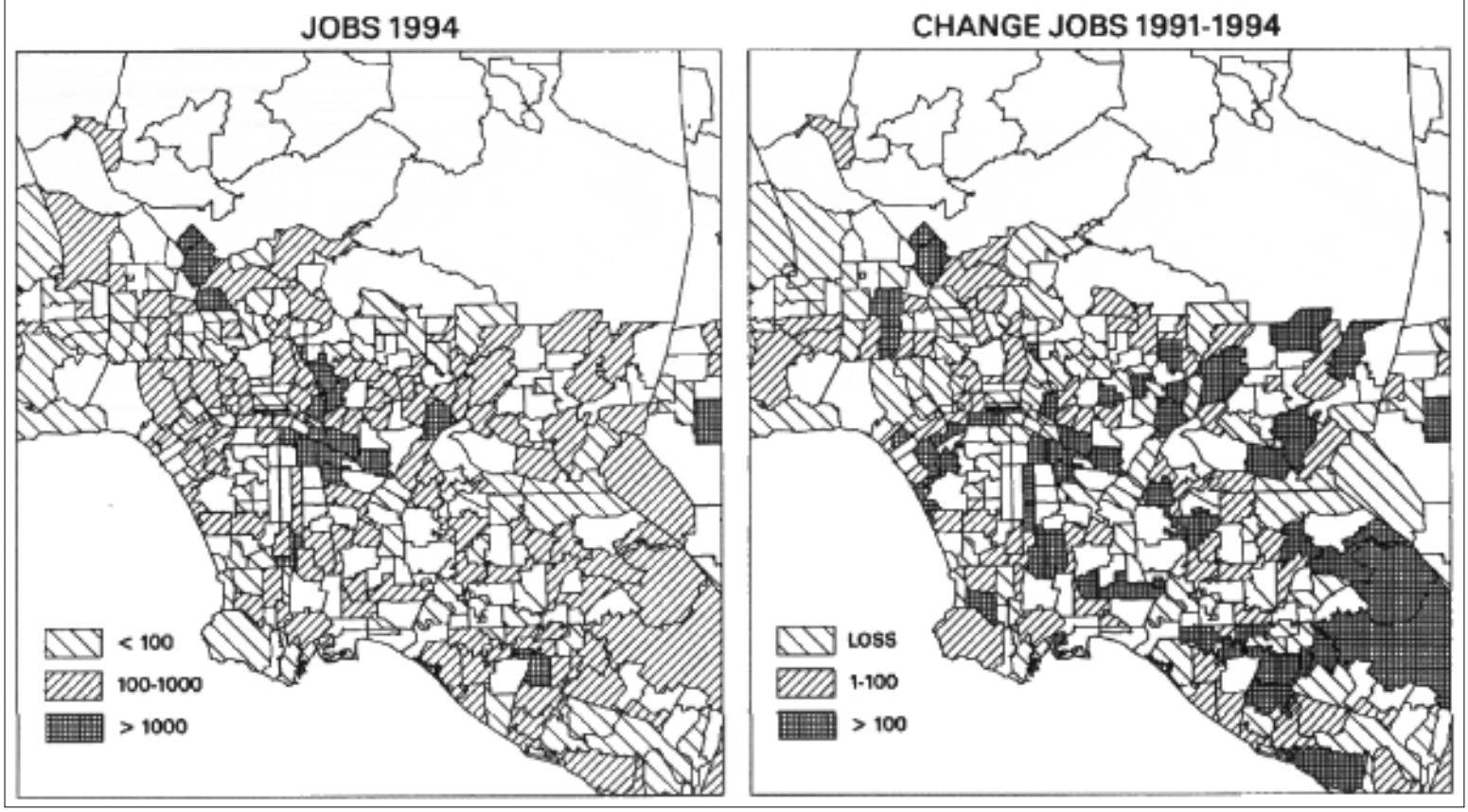
| SIC | Categories |
|---|---|
| 221 | Broadwoven Fabric Mills, Cotton |
| 2211 | Broadwoven fabric mills, cotton (90%) |
| 222 | Broadwoven Fabric Mills, Manmade |
| 2221 | Broadwoven fabric mills, manmade (80%) |
| 223 | Broadwoven Fabric Mills, Wool |
| 2231 | Broadwoven fabric mills, wool (90%) |
| 224 | Narrow Fabric Mills |
| 2241 | Narrow fabric mills (80%) |
| 225 | Knitting Mills |
| 2253 | Knit outerwear mills (100%) |
| 2257 | Weft knit fabric mills (100%) |
| 2258 | Lace & warp knit fabric mills (70%) |

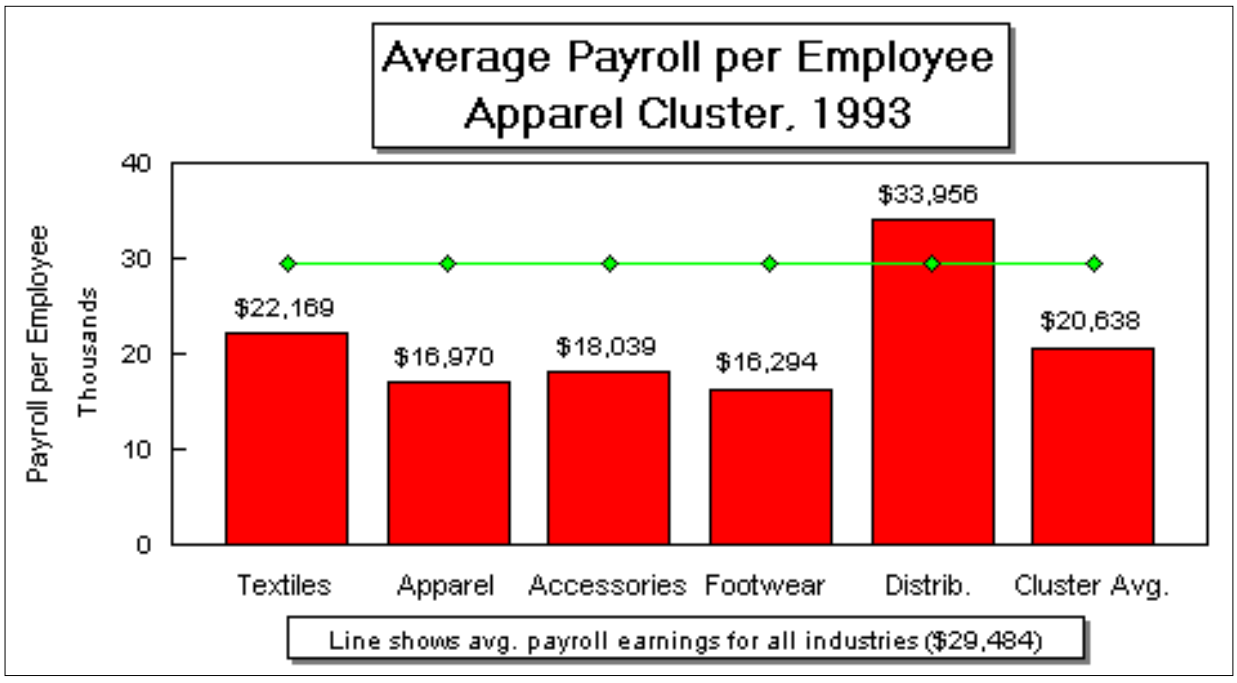
| | | |
|---|---|---|
| | 2259 | Knitting mills, nec (60%) |
| 226 | Textile Finishing, Except Wool | |
| | 2261 | Finishing plants, cotton (90%) |
| | 2262 | Finishing plants, manmade (80%) |
| | 2269 | Finishing plants, nec (60%) |
| 228 | Yarn and Thread Mills | |
| | 2281 | Yarn spinning mills (60%) |
| | 2282 | Throwing and winding mills (80%) |
| | 2284 | Thread mills (100%) |
| 229 | Miscellaneous Textile Goods | |
| | 2297 | Nonwoven fabrics (50%) |
| | 2299 | Textile goods, nec (50%) |
| 231 | Men's and Boy's Suits and Coats | |
| | 2311 | Men's and boy's suits and coats (100%) |
| 232 | Men's and Boy's Furnishings | |
| | 2321 | Men's and boys' shirts (100%) |
| | 2322 | Men's and boys' underwear & nightwear (100%) |
| | 2323 | Men's and boys' neckwear (100%) |
| | 2325 | Men's and boys' trousers and slacks (100%) |
| | 2326 | Men's and boys' work clothing (100%) |
| | 2329 | Men's and boys' clothing, nec (100%) |
| 233 | Women's and Misses' Outerwear | |
| | 2331 | Women's and misses' blouses & shirts (100%) |
| | 2335 | Women's, juniors' & misses' dresses (100% |
| | 2337 | Women's and misses' suits and coats (100%) |
| | 2339 | Women's and misses' outerwear, nec (100%) |
| 234 | Women's and Children's Undergarments | |
| | 2341 | Women's and children's underwear (100%) |
| | 2342 | Bras, girdles, and allied garments (100%) |
| 235 | Hats, Caps, and Millnery | |
| | 2353 | Hats, caps, and millnery (100%) |
| 236 | Girls' and Children's Outerwear | |
| | 2361 | Girls' & children's dresses, blouses (100%) |
| | 2369 | Girls' and children's outerwear, nec (100%) |
| 238 | Miscellaneous Apparel and Accessories | |
| | 2384 | Robes and dressing gowns (100%) |
| | 2386 | Leather and sheep-lined clothing (100%) |

| | | |
|---|---|---|
| | 2387 | Apparel belts (100%) |
| | 2389 | Apparel and accessories, nec (100 %) |
| 239 | Misc. Fabricated Textile Products | |
| | 2393 | Textile bags (30%) |
| | 2394 | Canvas and related products (20%) |
| | 2395 | Pleating and stitching (100%) |
| | 2396 | Automotive and apparel trimmings (70%) |
| | 2397 | Schiffli machine embroideries (100%) |
| | 2399 | Fabricated textile products, nec (40%) |
| 302 | Rubber and Plastics Footwear | |
| | 3021 | Rubber and plastics footwear (100%) |
| 311 | Leather Tanning and Finishing | |
| | 3111 | Leather tanning and finishing (60%) |
| 313 | Footwear Cut Stock | |
| | 3131 | Footwear cut stock (100%) |
| 314 | Footwear, Except Rubber | |
| | 3142 | House slippers (100%) |
| | 3143 | Men's footwear, except athletic (100%) |
| | 3144 | Women's footwear, except athletic (100%) |
| | 3149 | Footwear, except rubber, nec (100%) |
| 315 | Leather Gloves and Mittens | |
| | 3151 | Leather gloves and mittens (100%) |
| 317 | Handbags and Personal Leather Goods | |
| | 3171 | Women's handbags and purses (100%) |
| | 3172 | Personal leather goods, nec (100%) |
| 319 | Leather Goods, NEC | |
| | 3199 | Leather goods, nec (60%) |
| 355 | Special Industry Machinery | |
| | 3552 | Textile machinery (100%) |
| 396 | Costume Jewelry & Notions | |
| | 3965 | Fasterners, buttons, needles (100%) |
| 513 | Apparel, Piece goods, and Notions-Wholesale | |
| | 5131 | Piece goods & notions (100%) |
| | 5136 | Men's and boys' clothing (100%) |
| | 5137 | Women's and children's clothing (100%) |
| | 5139 | Footwear (100%) |

## SOUTHERN CALIFORNIA REGION

## APPAREL INDUSTRY CLUSTER - BY ZIP CODE



- How is employment within the Entertainment Cluster distributed across the counties?

**TABLE 13**
**Spatial Distribution of Jobs in the Entertainment Cluster, 1993**

| | Ventura | Los Angeles | Orange | San Bernardino | Riverside | Imperial | Region | State | Region % of State |
|---|---|---|---|---|---|---|---|---|---|
| Publishing & printing related to entertainment | 402 | 11,867 | 4,120 | 556 | 506 | 30 | 17,481 | 34,035 | 51.4% |
| Manufacture & distribution of entertainment equipment | 342 | 5,779 | 2,110 | 215 | 36 | 2 | 8,484 | 13,006 | 65.2% |
| Distribution of entertainment | 910 | 12,095 | 1,686 | 549 | 516 | 9 | 15,764 | 28,396 | 55.5% |
| Advertising and services related to entertainment | 126 | 5,078 | 1,964 | 40 | 110 | 1 | 7,320 | 12,688 | 57.7% |
| Entertainment prod. activities | 937 | 106,534 | 4,225 | 657 | 661 | 17 | 113,031 | 143,983 | 78.5% |
| CLUSTER TOTAL | 2,718 | 141,353 | 14,105 | 2,017 | 1,829 | 58 | 162,080 | 232,107 | 69.8% |
| | 1.7% | 87.2% | 8.7% | 1.2% | 1.1% | < 0.1% | 100.0% | | |

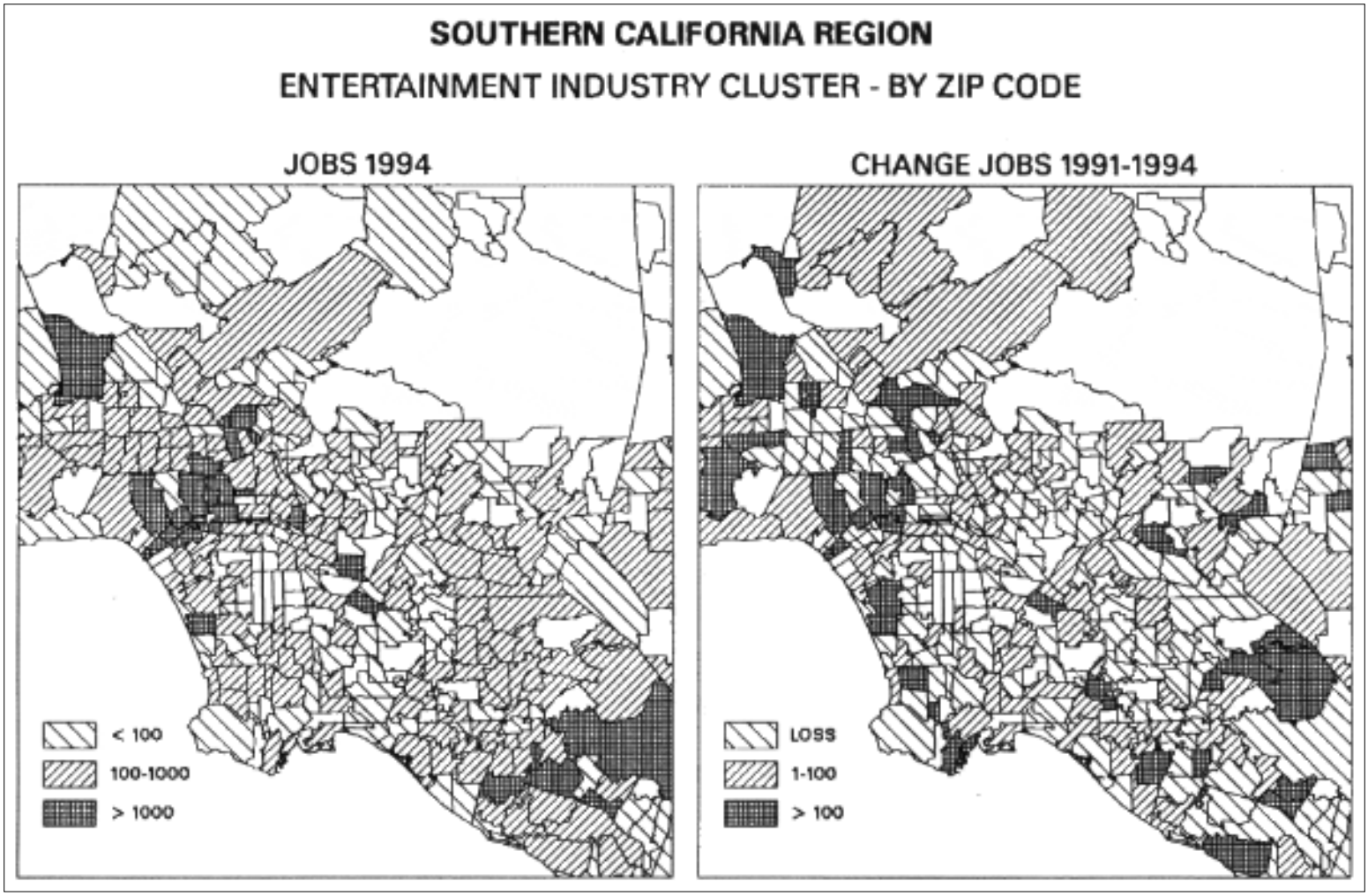
Source: Based on ES202 data from the Minnesota Implan Group, 1993

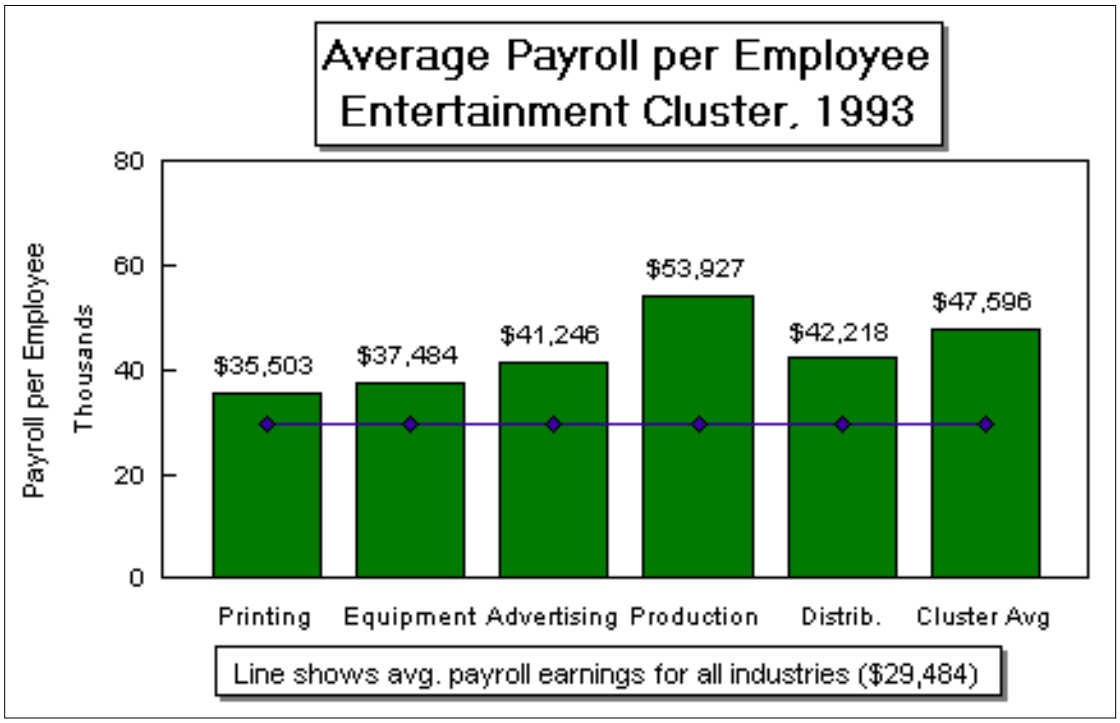
**Components of the Entertainment Cluster by SIC Code**

| SIC | Categories |
|---|---|
| 272 | Periodicals |
| 2721 | Periodicals (40%) |
| 273 | Books |
| 2731 | Book publishing (30%) |
| 2732 | Book printing (30%) |
| 274 | Miscellaneous Publishing |
| 2741 | Miscellaneous publishing (40%) |

| | | |
|---|---|---|
| 275 | Commercial Printing | |
| | 2752 | Commercial printing, lithographic (40%) |
| | 2754 | Commercial printing, gravure (10%) |
| | 2759 | Commercial printing, nec (40%) |
| 364 | Electric Lighting and Wiring Equipment | |
| | 3648 | Lighting equipment, nec (20%) |
| 365 | Household Audio & Video Equipment | |
| | 3651 | Household audio & video equipment (25%) |
| | 3652 | Prerecorded records and tapes (70%) |
| 386 | Photographic Equipment & Supplies | |
| | 3861 | Photographic equipment & supplies (100%) |
| 399 | Misc. Manufacturing Industries | |
| | 3999 | Misc. manufactures (5%) |
| 483 | Radio & Television Broadcasting | |
| | 4832 | Radio broadcasting stations (60%) |
| | 4833 | TV broadcasting stations (50%) |
| 484 | Cable and Other Pay TV Services | |
| | 4841 | Cable and other pay TV services (50%) |
| 489 | Communications Services, NEC | |
| | 4899 | Communications services, nec (30%) |
| 504 | Professional and Commercial Equipment-Wholesale | |
| | 5043 | Photographic equipment & supplies-wholesale (60%) |
| 596 | Nonstore Retailers | |
| | 5961 | Catalog & mail-order houses (10%) |
| 731 | Advertising | |
| | 7311 | Advertising agencies (30%) |
| | 7313 | Radio, TV, publisher representatives (35%) |
| | 7319 | Advertising, nec (30%) |
| 733 | Mailing, Reproduction, Stenographic | |
| | 7335 | Commercial photography (40%) |
| | 7336 | Commercial art & graphic design (50%) |
| 737 | Computer and Data Processing Services | |
| | 7372 | Prepackaged software (40%) |
| 738 | Miscellaneous Business Services | |
| | 7389 | Business services, nec (15%) |
| 781 | Motion Picture Production & Services | |

| | | |
|---|---|---|
| | 7812 | Motion picture & video production (100%) |
| | 7819 | Services allied to motion pictures (100%) |
| 782 | Motion Picture Distribution & Services | |
| | 7822 | Motion picture and tape distribution (100%) |
| | 7829 | Motion picture distribution services (100%) |
| 792 | Producers, Orchestras, Entertainers | |
| | 7922 | Theatrical producers & services (100%) |
| | 7929 | Entertainers & entertainment groups (100%) |
| 899 | Services, NEC | |
| | 8999 | Services, nec (15%) |




Average Payroll per Employee
Entertainment Cluster, 1993
Payroll per Employee
Thousands
80
60
40
20
0
$35,503
$37,484
$41,246
$53,927
$42,218
$47,596
Printing
Equipment
Advertising
Production
Distrib.
Cluster Avg
Line shows avg. payroll earnings for all industries ($29,484)

- How is employment within the Information Cluster distributed across the counties?

**TABLE 14**
**Spatial Distribution of Jobs in the Information Cluster, 1993**

| | Imperial | Los Angeles | Orange | Riverside | San Bernardino | Ventura | Region | State | Region % of State |
|---|---|---|---|---|---|---|---|---|---|
| Communications hardware | 0 | 4,041 | 1,810 | 303 | 388 | 2,016 | 8,558 | 34,434 | 24.9% |
| Info processing hardware | 16 | 26,058 | 15,880 | 84 | 348 | 1,810 | 44,197 | 115,790 | 38.2% |
| Info transmission providers | 77 | 26,287 | 9,082 | 1,932 | 3,891 | 3,599 | 44,868 | 103,530 | 43.3% |
| Info systems management, data processing & wholesale distrib. | 12 | 19,055 | 8,127 | 523 | 439 | 748 | 28,904 | 60,294 | 47.9% |
| Software developers | 4 | 9,708 | 4,935 | 255 | 815 | 1,195 | 16,912 | 59,309 | 28.5% |
| CLUSTER TOTAL | 109 | 85,150 | 39,835 | 3,096 | 5,882 | 9,368 | 143,439 | 373,357 | 38.4% |
| | 0.1% | 59.4% | 27.8% | 2.2% | 4.1% | 6.5% | 100.0% | | |

Source: Based on ES202 data from the Minnesota Implan Group, 1993

**Components of the Information Technology Cluster Cluster by SIC Code**

| SIC | Categories |
|---|---|
| 357 | Computer and Office Equipment |
| 3571 | Electronic computers (100%) |
| 3572 | Computer storage devices (100%) |
| 3575 | Computer terminals (100%) |
| 3577 | Computer peripheral equipment, nec (50%) |
| 3578 | Calculating and accounting equipment (25%) |
| 365 | Household Audio & Video Equipment |
| 3651 | Household audio & video equipment (60%) |
| 366 | Communications Equipment |

| | | |
|---|---|---|
| | 3661 | Telephone & telegraph apparatus (100%) |
| | 3663 | Radio & TV communications equipment (100%) |
| | 3669 | Communications equipment, nec (100%) |
| 369 | Misc. Electrical Equipment & Supplies | |
| | 3695 | Magnetic & optical recording media (50%) |
| 381 | Search and Navigation | |
| | 3812 | Search and navigation equipment (40%) |
| 382 | Measuring and Controlling Devices | |
| | 3823 | Process control instruments (30%) |
| | 3829 | Measuring & controlling devices, nec (25%) |
| 481 | Telephone Communications | |
| | 4812 | Radiotelephone communications (100%) |
| | 4813 | Telephone communications, exc. radio (100%) |
| 482 | Telegraph & Other Communications | |
| | 4822 | Telegraph & other communications (100%) |
| 489 | Communications Services, NEC | |
| | 4899 | Communications services, nec (70%) |
| 506 | Electrical Goods-Wholesale | |
| | 5065 | Electronic parts and equipment-wholesale (50%) |
| 737 | Computer and Data Processing Services | |
| | 7371 | Computer programming services (100%) |
| | 7372 | Prepackaged software (30%) |
| | 7373 | Computer integrated systems design (100%) |
| | 7374 | Data processing and preparation (100%) |
| | 7375 | Information retrieval services (100%) |
| | 7376 | Computer facilities management (30%) |
| | 7377 | Computer rental and leasing (70%) |
| | 7379 | Computer related services, nec (80%) |
| 874 | Management and Public Relations | |
| | 8742 | Management consulting services (10%) |
| | 8748 | Business consulting, nec (10%) |

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|---|---|---|

- What is the earnings potential of jobs in the cluster?
- Is growth in wages and salaries keeping pace with growth in jobs?

**TABLE 15**
**Prosperity Index for Selected Industrial Clusters**
**Comparison of Changes in Payroll and Employment, 1991-93**

| | [1] Payroll Change* 1991-93 | [2] Employment Change 1991-93 | [1]/[2] Prosperity Index |
|---|---|---|---|
| Apparel | 0.97 | 0.97 | 1.01 |
| Entertainment | 1.08 | 1.02 | 1.05 |
| Information | 0.95 | 0.91 | 1.04 |
| Avg. All Industries | 0.94 | 0.94 | 1.00 |

Note: Change is measured as a ratio of [1] Employment in 1993 to Employment in 1991 and [2] Total payroll in 1993 to Total payroll in 1991. The Prosperity Index is a ratio of Column 1 to Column 2. A value greater than 1.00 means that the change in payroll was greater than the change in employment, and income for workers in that sector is generally rising.

* Payroll values adjusted to 1993 dollars based on the Consumer Price Index.

Source: Based on ES202 data from the Minnesota Implan Group, 1991, 1993


Natural Resources Based
Economic Region
NORTH COAST
DEL NORTE
SISKIYOU
MODOC
TRINITY
SHASTA
LASSEN
HUMBOLDT
NORTH MOUNTAIN
PLUMAS
MENDOCINO
SIERRA
NEVADA
LAKE
PLACER
EL DORADO
ALPINE
AMADOR
CALAVERAS
TUOLUMNE
MONO
CENTRAL MOUNTAIN
MARIPOSA
INYO

# SUMMARY

## BACKGROUND

The economic base analysis for the Natural Resources-based Region was intended to provide members of the State Strategy Panel and participants of the Regional Forum with a statistical picture of the region's economic structure and recent trends. The primary database for the study was ES202 provided by the Labor Market Information Division of the California Employment Development Department, supplemented by ES202 data from the Minnesota IMPLAN Group, Inc. At the time this project was initiated, the most accurate and consistent series of employment data available was for the period from 1991 to 1994. Since the State Strategy effort is intended to promote long-term economic monitoring at the state and regional levels, the relatively short time series presented in this study will be added to and further developed over time. The economic base analysis highlights three of the Region's many industrial clusters--Wood Products, Health Services, and Tourism.

## KEY FINDINGS FROM THE ECONOMIC BASE ANALYSIS

### Changes in the Location of Employment

- The Natural Resources-based Region is made up of 19 counties in their entirety and the eastern portions of two counties (El Dorado and Placer). Together, the region covers the northern part of the state and down the eastern edge to Inyo County. It is a diverse region, including coastal and interior environments, and rainy and arid climates. However, the region shares a largely rural character with total employment of less than 187,000 in 1994 or about 1.8% of the statewide total. It is also a region whose economic base historically has been tied to natural resources, including timber, agriculture, fishing, and mining.
- In terms of employment, the counties in the region range from Shasta County with more than 41,000 private-sector jobs to Sierra County with 393 jobs.
- During the recessionary period from 1991-94, the region overall gained 6,968 jobs, an increase of almost 4%. In comparison, employment in California dropped 4.3% over this same interval. Given the region's small employment base, its share of total state employment inched up only marginally from 1.7% in 1991 to 1.8% in 1994.
- The largest gains in employment were experienced in El Dorado and Placer Counties. The data covered only the eastern portions of these counties, which is primarily the Lake Tahoe Basin area. Both counties together added 2,680 jobs. Five counties had job increases of 600 or more, including Humboldt, Nevada, Siskiyou, Mono, and Tuolumne Counties. Only three of the 21 counties lost employment, of which the largest decline occurred in Mariposa County (-817 jobs).

- The economic analysis examined conditions and trends in 3 subregions: North Coast, North Mountain, and Central Mountain. Of these three, the North Mountain subregion was the largest with approximately 83,400 jobs or 44.7% of the regional total. The North Coast subregion was the second largest with almost 69,000 jobs and the Central Mountain subregion contained 34,300 jobs (37.0% and 18.3%, respectively of the region's employment base.)

**Changes in Earnings**

- The region as a whole had a total payroll of $871 million in the 1st Quarter of 1994. This amount constituted 1.2% of total private-sector payroll statewide. Shasta County had the largest payroll ($219 million), followed by Humboldt County ($160 million). Sierra, Alpine, and Modoc Counties all had 1st Quarter payrolls totaling less than $5 million.
- In 1994, the North Mountain subregion's share of the regional payroll was 47.5%, while its share of the region's employment was 44.7%. The high earnings to jobs index (106) indicates the North Mountain subregion had a larger concentration of better paying jobs. In contrast, the index for the North Coast subregion was 96; and it was 93 for the Central Mountain subregion.

**Employment by Sector**

- The distribution of employment shows relatively high percentages in the local-serving sectors of the economy. This is particularly clear in the case of retail, where approximately 29% of the region's jobs are found. In comparison, 21% of the jobs statewide are in the retail sector; and a diverse metropolitan area, like the San Francisco Bay Area, has less than 20% of employment in the retail sector.
- Health services is another sector in which the region has a proportionately large number of jobs.
- The region has a concentration of employment in some export-oriented sectors. In the North Coast subregion, 11.3% of the jobs are found in durable manufacturing, which is slightly higher than the comparable percentage at the state level (10.9%). Durable goods include wood products.
- All of the subregions have a larger proportion of employment in visitor services than does the state. This is especially so in the Central Mountain subregion, where almost 1 in 5 private-sector jobs is related to tourism.
- Not all of the sectors performed similarly through the 1991-94 recession period. The North Coast and North Mountain subregions experienced a similar pattern: employment declined in construction, manufacturing, and wholesale trade, but was made up by gains in retail trade and services.
- The Central Mountain subregion, however, showed a different pattern of economic change. Employment declined in most of the resources-based sectors ( in contrast to growth further north). On the other hand, manufacturing employment grew in the Central Mountain subregion, contrary to the losses experienced elsewhere in the region.

- What is striking about the region's economy is the extent to which it is the domain of small businesses. With the exception of hospitals, department stores, and some milling operations, the average firm size in most industries is less than 50 employees.

**North Coast Subregion**

- The list of top 30 industries with the highest employment in the North Coast subregion reveals the strong linkages between the economy and renewable resources, particularly forestry and agriculture. The wood products industry is represented by sawmills & planing mills (4,580 jobs in 1994), logging (850 jobs), and miscellaneous wood products (555 jobs). Major agriculture-based industries include the production of fruits & tree nuts (1,400 jobs), miscellaneous food processing (850 jobs), beverages (800 jobs), and wholesale trade in groceries and other food products (520) jobs.
- Another significant source of jobs is tourism, which includes eating & drinking places, hotels & motels, and miscellaneous recreational services. Together, these industries accounted for approximately 9,375 jobs in 1994.
- Among the fastest growing industries (1991-94), were three timber-related industries: sawmills & planing mills (+368 jobs), logging (+159 jobs), and forestry services (+93 jobs).

**North Mountain Subregion**

- Most of the top employers in this subregion provide services to the local population. The most notable exceptions are the timber-related industries. Sawmills & planing mills, paper mills, and logging collectively employed about 4,050 people in 1994.
- A number of top employers are also related to tourism, including eating & drinking places (which was the single largest employment category--8,700 jobs--in 1994), hotels & motels (2,275 jobs), and amusement & recreational services (1,850 jobs).
- Of the industries reporting the largest net gains in employment, most fall into one of three categories: tourism-related, health services, or business services.

**Central Mountain Subregion**

- The significant role of tourism in the area's economy is reflected by the top industries. Three of the five are related to visitor services. Hotels & motels (with 5,350 employees) and eating & drinking places (with 4,180 employees) generated substantially more employment than grocery stores, the third largest industry with 1,540 employees in 1994. The fourth largest industry was miscellaneous recreational services which employed approximately 1,300 people.
- The Central Mountain subregion's involvement with forestry is also evident. Sawmills & planing mills was the sixth largest industry in 1994, employing almost 1,000 persons and another 260 persons were engaged in logging activities.
- The largest gains in employment (1991-94) were experienced by tourism-related

industries, including recreational services, hotels & motels, and eating & drinking places. together, these industries added, 1,400 net jobs.

- Interestingly, the Central Mountain subregion also added jobs in several manufacturing industries: electrical industrial apparatus, general industrial machinery, communications equipment, and measuring & controlling devices. Although the absolute job gains were relatively small, ranging from 33 to 60 net new jobs, these developments increased economic diversity in the area.

***The Wood Products cluster was featured at the Regional Forum. In addition, the Health Services and Tourism sectors were examined in greater detail given their importance to the region.***

**Wood Products Cluster**

- The region clearly has a concentration of employment in the wood products industries (ranging from logging to milling to production of value-added finished products). The cluster is particularly important in the North Coast and North Mountain subregions where about 10% of the private-sector jobs involve wood products. In the Central Mountain subregion, the wood products cluster claims slightly more than 4% of total employment. In comparison, only 1.2% of the state's employment overall is related to wood products.
- Between 1991 and 1993, both jobs and earnings decreased in the Northern counties. Although the cluster has a smaller presence in the Central Mountain subregion, employment grew by about 7% and earnings increased slightly. (In contrast to these trends--which are for the cluster as a whole--specific activities fared even better, especially logging and sawmilling.)
- The wood products cluster provides some of the highest paying jobs in the region. In each of the subregions, average annual earnings (in 1993) exceeded $28,770, which was the statewide average for all industries.

**Health Services**

- Health services generate a relatively higher number of jobs in the region than in the state as a whole. In the Northern counties, as much as 11.5% of the private-sector employment was engaged by health service providers in 1994. In contrast, only7.3% of the state's workers were similarly employed. The Central Mountain subregion had a smaller percentage of health service workers (8.2%), but it was still above the state average.
- Health service jobs and earnings increased in all of the subregions. Growth was particularly rapid in the Northern counties where growth rates were in the double-digits in the period between 1991 and 1994.
- In the North Mountain and Central Mountain subregions, earnings growth exceeded job growth.
- Although earnings by health service workers are increasing in many areas of the region, this sector is still paid less than the average for all industries in the state. Moreover, in an urban area (such as San Francisco) health service workers make, on average, about $9,000 more per year.

**Tourism-related Services**

- About 3.4% of the state's employment is supported by tourism. The San Francisco Bay Region has a similar percentage--3.2%. In contrast about 5% of the Northern counties' economy and a very large 20% share of the Central Mountain economy are supported by tourism. (Since "tourism-related services" was defined to include lodging and recreation only, tourism's total impact on the economic base would be greater with the addition of jobs supporting dining and shopping.)
- The largest growth in tourism jobs (+35.8%) occurred in the North Mountain subregion. Payroll jumped even higher (+43.3%). The discrepancy in these two growth rates suggests that this subregion is developing visitor activities with a high value content.
- Employment and earnings growth were also significant in the North Coast and Central Mountain subregions. However, in these two areas, employment growth out paced earnings, thus leading to lower average earnings.
- The tourism-related sector is generally low paying, but there is some variation from place to place. Average earnings range from $9,024 in the North Coast subregion to $13,645 in the Central Mountain subregion--a variance of $4,600 within the region. In the San Francisco Bay Region, earnings amount to slightly more than $19,000--still significantly below the 1994 state-wide average of $28,160 for all industries. It is important to point out that the earnings values are understated since they were annualized from data for the first quarter (January-March) and, therefore, would be affected by seasonal slowdowns.

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- How many jobs are located in the Natural Resources-based region, and how are they distributed across the counties?
- How did the employment levels fare during the 1991-94 recession period?

**TABLE 1**
**Economic Overview of the Natural Resources-based Region and Recent Changes: Employment**

| County | Avg. Quarterly Employment 1991 | Avg. Quarterly Employment 1994 | Net Change Employment 1991-94 | Pct. Change Employment 1991-94 |
|---|---|---|---|---|
| Del Norte | 4,266 | 4,382 | 116 | 2.7% |
| Humboldt | 33,420 | 34,072 | 652 | 2.0% |
| Lake | 8,391 | 8,700 | 309 | 3.7% |
| Mendocino | 21,627 | 21,805 | 189 | 0.8% |
| **North Coast** | **67,704** | **68,959** | **1,255** | **1.9%** |
| El Dorado (east slope) | 500 | 1,962 | 1,462 | 292.4% |
| Lassen | 3,841 | 4,280 | 439 | 11.4% |
| Modoc | 1,262 | 1,292 | 30 | 2.4% |
| Nevada | 17,382 | 18,035 | 653 | 3.8% |
| Placer (east slope) | 386 | 1,604 | 1,218 | 315.5% |
| Plumas | 3,606 | 3,612 | 6 | 0.2% |
| Shasta | 40,992 | 41,212 | 220 | 0.5% |
| Sierra | 329 | 393 | 64 | 19.5% |
| Siskiyou | 8,800 | 9,400 | 600 | 6.8% |
| Trinity | 1,454 | 1,602 | 148 | 10.2% |
| **North Mountain** | **78,552** | **83,392** | **4,840** | **6.2%** |
| Amador | 5,895 | 6,155 | 260 | 4.4% |
| Alpine | 849 | 1,127 | 278 | 32.7% |
| Calaveras | 4,639 | 4,609 | (30) | -0.6% |
| Inyo | 4,553 | 4,305 | (248) | -5.4% |
| Mariposa | 3,768 | 2,951 | (817) | -21.7% |
| Mono | 4,022 | 4,841 | 819 | 20.4% |
| Tuolumne | 9,663 | 10,274 | 611 | 6.3% |
| **Central Mountain** | **33,389** | **34,262** | **873** | **2.6%** |

| | | | | |
|---|---|---|---|---|
| **REGIONAL TOTAL** | **179,645** | **186,613** | **6,968** | **3.9%** |
| **Region % of State** | **1.7%** | **1.8%** | | |
| **CALIFORNIA** | **10,597,473** | **10,144,936** | **(452,537)** | **-4.3%** |

Source: Based on ES202 data from the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department

- What level of earnings are generated by the county and regional economies?
- How was payroll affected during the 1991-94 period, and how did payroll changes vary by county?

**TABLE 2**
**Economic Overview of the Natural Resources-based Region and Recent Changes: Payroll**

| County | Avg. Quarterly Payroll ($ mil.) 1991 | Avg. Quarterly Payroll ($ mil.) 1991 (adj.*) | Avg. Quarterly Payroll ($ mil.) 1994 | Net Change Payroll ($ mil.) 1991-94 | Percent Change in Payroll 1991-94 |
|---|---|---|---|---|---|
| Del Norte | 17.40 | 18.88 | 17.72 | (1.16) | -6.1% |
| Humboldt | 149.73 | 164.99 | 159.81 | (5.18) | -3.1% |
| Lake | 34.69 | 38.23 | 38.84 | 0.61 | 1.6% |
| Mendocino | 90.28 | 99.48 | 91.81 | (7.66) | -7.7% |
| **North Coast** | **291.83** | **321.57** | **308.18** | **(13.39)** | **-4.2%** |
| El Dorado (east slope) | 1.96 | 2.16 | 7.76 | 5.59 | 258.6% |
| Lassen | 16.35 | 18.02 | 20.84 | 2.82 | 15.7% |
| Modoc | 4.00 | 4.40 | 4.55 | 0.14 | 3.3% |
| Nevada | 79.12 | 87.18 | 92.21 | 5.03 | 5.8% |
| Placer (east slope) | 1.54 | 1.70 | 5.45 | 3.75 | 220.3% |
| Plumas | 15.92 | 17.54 | 18.42 | 0.87 | 5.0% |
| Shasta | 200.86 | 221.33 | 218.81 | (2.51) | -1.1% |
| Sierra | 1.70 | 1.88 | 2.18 | 0.30 | 16.2% |
| Siskiyou | 34.18 | 37.66 | 36.75 | (0.91) | -2.4% |
| Trinity | 5.79 | 6.38 | 6.97 | 0.59 | 9.2% |
| **North Mountain** | **361.43** | **398.26** | **413.94** | **15.68** | **3.9%** |
| Amador | 27.40 | 30.19 | 30.16 | (0.03) | -0.1% |
| Alpine | 3.73 | 4.10 | 3.92 | (0.19) | -4.5% |
| Calaveras | 19.43 | 21.41 | 19.73 | (1.68) | -7.8% |
| Inyo | 19.32 | 21.28 | 18.93 | (2.35) | -11.0% |

| | | | | | |
|---|---|---|---|---|---|
| Mariposa | 14.80 | 16.30 | 10.71 | (5.59) | -34.3% |
| Mono | 14.52 | 16.00 | 19.21 | 3.21 | 20.1% |
| Tuolumne | 40.99 | 45.16 | 46.65 | 1.48 | 3.3% |
| **Central Mountain** | **140.17** | **154.46** | **149.31** | **(5.14)** | **-3.3%** |
| **REGIONAL TOTAL** | **793.43** | **874.29** | **871.43** | **(2.85)** | **-0.3%** |
| **Region % of State** | **1.1%** | **1.2%** | **1.2%** | | |
| **CALIFORNIA** | **69,001.00** | **74,988.00** | **71,429.00** | **(3,559.00)** | **-4.7%** |

* Adjusted to 1994 dollars using the Consumer Price Index.
Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department

- How is employment distibuted across industrial sectors in each subregion?
- How does each subregion's economic profile compare to that of a larger urban region or the state as a whole?

**TABLE 3**
**Percent Employment in Each Sector for the Natural Resources-based Region and Comparison with the S.F. Bay Region, 1994**

| | North Coast | North Mountain | Central Mountain | S.F. Bay Region | State of California |
|---|---|---|---|---|---|
| Agriculture | 4.5% | 2.7% | 1.6% | 3.2% | 2.1% |
| Forestry | 0.4% | 0.5% | 0.1% | 0.0% | 0.0% |
| Fishing | 0.5% | 0.0% | 1.9% | 0.0% | 0.0% |
| Mining | 0.6% | 0.5% | * | 0.3% | 0.3% |
| **Construction** | **4.3%** | **5.4%** | **4.7%** | **4.4%** | **4.4%** |
| Manufacturing | | | | | |
| Durable | 11.3% | 8.3% | 6.3% | 11.7% | 10.9% |
| Nondurable | 4.9% | 2.9% | 2.1% | 5.8% | 6.8% |
| **Transp, Utilities** | **5.1%** | **6.7%** | **4.6%** | **6.6%** | **5.9%** |
| Wholesale | 3.5% | 4.9% | 2.8% | 6.2% | 6.8% |
| **Retail** | **28.5%** | **29.5%** | **30.2%** | **19.5%** | **21.0%** |
| Financial | 5.3% | 5.5% | 5.6% | 8.2% | 7.9% |
| Services | | | | | |
| **Personal** | **2.3%** | **2.4%** | **2.1%** | **2.6%** | **2.9%** |
| Business/Other | 12.4% | 13.4% | 9.4% | 20.7% | 19.1% |
| Tourism-related** | 4.8% | 5.2% | 19.9% | 3.2% | 3.4% |
| **Health** | **11.5%** | **11.5%** | **8.2%** | **7.3%** | **8.1%** |

| | | | | | |
|---|---|---|---|---|---|
| Nonclassifiable | 0.2% | 0.4% | 0.5% | 0.2% | 0.4% |
| TOTAL | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Notes: Boxes indicate local-serving economic activities
* Employment included in "Construction" category.
** Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement & Recreational Services (SIC 79)

Source: Based on Es202 data for the 1st Quarters for 1991, 1994 , from the California Employment Development Department.

- What is the breakdown of employment by the major economic sectors in the NORTH COAST subregion*?

**TABLE 4**
**Employment by Sector for the North Coast Subregion**

| | Employ. 1991 | Employ. 1994 | Percent of Total 1994 | Net Change Employ. 1991-94 |
|---|---|---|---|---|
| Agriculture | 3,031 | 3,111 | 4.5% | 80 |
| Forestry | 169 | 253 | 0.4% | 84 |
| Fishing | 405 | 340 | 0.5% | (65) |
| Mining | 919 | 424 | 0.6% | (495) |
| Construction | 3,398 | 2,978 | 4.3% | (420) |
| Manufacturing | | | | |
| Durable | 8,196 | 7,761 | 11.3% | (435) |
| Nondurable | 3,439 | 3,348 | 4.9% | (91) |
| Transp, Utilities | 3,687 | 3,503 | 5.1% | (184) |
| Wholesale | 2,870 | 2,434 | 3.5% | (436) |
| Retail | 18,830 | 19,665 | 28.5% | 835 |
| Financial | 3,481 | 3,654 | 5.3% | 173 |
| Services | | | | |
| Personal | 1,535 | 1,575 | 2.3% | 40 |
| Business and Other | 8,141 | 8,537 | 12.4% | 396 |
| Tourism-related** | 2,550 | 3,302 | 4.8% | 752 |
| Health | 7,013 | 7,952 | 11.5% | 939 |
| Nonclassifiable | 40 | 122 | 0.2% | 82 |
| TOTAL | 67,704 | 68,959 | 100.0% | 1,255 |

* The North Coast subregion includes the Counties of Del Norte, Humboldt, Mendocino, and Lake.

** Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement and Recreational Services (SIC 79).

Source: Based on Es202 data for the 1st Quarters for 1991, 1994 from the California labor Market Information Division, Employment Development Department.

- Which industries provide the most jobs in the NORTH COAST subregion?

**TABLE 5**
**Industries with the Largest Employment in the North Coast Subregion**

| Rank | SIC | Description | Employment 1994 | |
|---|---|---|---|---|
| 1 | 581 | Eating & drinking places | 6,333 | |
| 2 | 242 | Sawmills & planing mils | 4,581 | * |
| 3 | 541 | Grocery stores | 3,402 | |
| 4 | 806 | Hospitals | 3,080 | |
| 5 | 701 | Hotels & motels | 2,286 | |
| 6 | 531 | Department stores | 1,829 | |
| 7 | 801 | Offices & clinics of doctors | 1,612 | |
| 8 | 881 | Private households | 1,552 | |
| 9 | 805 | Nursing & personal care facilities | 1,495 | |
| 10 | 421 | Trucking & courier services, ex. air | 1,419 | |
| 11 | 017 | Production of fruits & tree nuts | 1,402 | |
| 12 | 602 | Commercial banks | 1,143 | |
| 13 | 152 | Residential building construction | 1,141 | |
| 14 | 594 | Misc. shopping goods stores | 1,008 | |
| 15 | 209 | Misc. food & kindred products | 849 | |
| 16 | 241 | Logging | 846 | * |
| 17 | 521 | Lumber & other bldg materials-retail | 818 | |
| 18 | 554 | Gasoline service stations | 808 | |
| 19 | 208 | Beverages | 804 | |
| 20 | 799 | Misc. amusement & recreational svcs | 756 | |
| 21 | 591 | Drug stores | 715 | |
| 22 | 551 | New & used car dealers | 692 | |
| 23 | 802 | Offices & clinics of dentists | 657 | |
| 24 | 835 | Child day care services | 644 | |
| 25 | 832 | Social svcs for indiv. & families | 643 | |
| 26 | 839 | Social services, nec | 570 | |
| 27 | 753 | Automotive repair shops | 567 | |
| 28 | 249 | Misc. wood products | 555 | * |
| 29 | 653 | Real estate agents & managers | 526 | |
| 30 | 514 | Groceries & rel. products-wholesale | 520 | |
| | | Total Employment in the Subregion | 68,959 | |

Industries with an asterisk (*) are related to the Wood Products Cluster.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept.

"nec" indicates activities not elsewhere classified.

- Which industries gained the largest number of jobs in the NORTH COAST subregion during a recent period?

**TABLE 6**
**Industries in the North Coast Subregion Reporting the Largest Net Gains in Employment, 1991-94**

| SIC | Description | Net Change Employ. 1991-94 | Average No. Employees per Estab. 1994 | Average Payroll per Employ. 1994* |
|---|---|---|---|---|
| 531 | Dept. stores | 615 | 96 | $10,689 |
| 701 | Hotels & motels | 467 | 11 | $8,982 |
| 806 | Hospitals | 391 | 308 | $22,565 |
| 242 | Sawmills & planing mills | 368 | 107 | $30,843 |
| 799 | Misc. amusement, rec svcs | 277 | 9 | $8,952 |
| 344 | Fabricated structural metal prod. | na | | |
| 591 | Drug stores | 195 | 17 | $19,006 |
| 801 | Offices & clinics of doctors | 185 | 7 | $25,623 |
| 673 | Trusts | na | | |
| 839 | Social services, nec | 174 | 17 | $14,189 |
| 835 | Child day care services | 168 | 8 | $10,358 |
| 541 | Grocery stores | 166 | 17 | $17,951 |
| 241 | Logging | 159 | 5 | $22,022 |
| 581 | Eating & drinking places | 155 | 11 | $7,389 |
| 805 | Nursing & personal care facilities | 146 | 83 | $14,940 |
| 232 | Men's & boy's furnishings | na | | |
| 802 | Offices & clinics of dentists | 109 | 5 | $19,958 |
| 554 | Gasoline service stations | 100 | 9 | $13,527 |
| 808 | Home health care services | 95 | 36 | $18,280 |
| 085 | Forestry services | 93 | 8 | $19,280 |
| 546 | Retail bakeries | 92 | 9 | $7,958 |
| 078 | Landscaping & horticultural svcs | 88 | 6 | $23,967 |

| | | | | |
|---|---|---|---|---|
| 733 | Mailing, reproduction, steno | 87 | 6 | $8,347 |
| 999 | Nonclassifiable establishments | 82 | 2 | $11,244 |
| 596 | Nonstore retailers (catalog, mail) | 76 | 10 | $16,192 |
| 275 | Commercial printing | 67 | 7 | $17,030 |
| 636 | Title insurance | 66 | 24 | $26,931 |
| 881 | Private households | 55 | 1 | $7,369 |
| 726 | Funeral service | 53 | 11 | $22,697 |
| 833 | Job training & related svcs | 47 | 28 | $9,294 |

* Quarterly payroll has been annualized.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept.

"na" indicates potentially confidential data which has been suppressed.

- What is the breakdown of employment by the major economic sectors in the NORTH MOUNTAIN subregion*?

**TABLE 7**
**Employment by Sector for the North Mountain Subregion**

| Sector | Employ. 1991 | Employ. 1994 | Percent of Total 1994 | Net Change Employ. 1991-94 |
|---|---|---|---|---|
| Agriculture | 2,452 | 2,272 | 2.7% | (180) |
| Forestry | 279 | 446 | 0.5% | 167 |
| Fishing | 12 | 15 | 0.0% | 3 |
| Mining | 336 | 434 | 0.5% | 98 |
| Construction | 6,092 | 4,472 | 5.4% | (1,620) |
| Manufacturing | | | | |
| Durable | 7,800 | 6,891 | 8.3% | (909) |
| Nondurable | 2,488 | 2,456 | 2.9% | (32) |
| Transp, Utilities | 5,270 | 5,611 | 6.7% | 341 |
| Wholesale | 4,170 | 4,078 | 4.9% | (92) |
| Retail | 22,482 | 24,631 | 29.5% | 2,149 |
| Financial | 4,065 | 4,565 | 5.5% | 500 |
| Services | | | | |
| Personal | 2,075 | 2,040 | 2.4% | (35) |
| Business and Other | 9,539 | 11,195 | 13.4% | 1,656 |
| Tourism-related** | 3,214 | 4,365 | 5.2% | 1,151 |
| Health | 8,222 | 9,628 | 11.5% | 1,406 |
| Nonclassifiable | 56 | 293 | 0.4% | 237 |
| TOTAL | 78,552 | 83,392 | 100.0% | 4,840 |

* The North Mountain subregion includes the Counties of Trinity, Siskiyou, Shasta, Modoc, Lassen, Plumas, Sierra, Nevada, Placer (east slope), and El Dorado (east slope).

** Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement and Recreational Services (SIC 79).

Source: Based on Es202 data for the 1st Quarters for 1991, 1994 from the California Labor Market Information Division, Employment Development Department.

- Which industries provide the most jobs in the NORTH MOUNTAIN subregion?

**TABLE 8**
**Industries with the Largest Employment in the North Mountain Subregion**

| Rank | SIC | Description | Employment 1994 | |
|---|---|---|---|---|
| 1 | 581 | Eating & drinking places | 8,698 | |
| 2 | 541 | Grocery stores | 4,432 | |
| 3 | 806 | Hospitals | 3,570 | |
| 4 | 242 | Sawmills & planing mills | 2,686 | * |
| 5 | 421 | Trucking & courier services, ex. air | 2,279 | |
| 6 | 701 | Hotels & motels | 2,275 | |
| 7 | 801 | Offices & clinics of doctors | 1,922 | |
| 8 | 799 | Misc. amusement, recreational svcs | 1,850 | |
| 9 | 805 | Nursing & personal care facilities | 1,663 | |
| 10 | 531 | Department stores | 1,443 | |
| 11 | 602 | Commercial banks | 1,403 | |
| 12 | 152 | Residential building construction | 1,195 | |
| 13 | 594 | Misc. shopping goods stores | 1,123 | |
| 14 | 554 | Gasoline service stations | 1,073 | |
| 15 | 836 | Residential care | 1,017 | |
| 16 | 802 | Offices & clinics of dentists | 1,010 | |
| 17 | 736 | Personnel supply services | 995 | |
| 18 | 551 | New & used car dealers | 982 | |
| 19 | 366 | Communications equipment | na | |
| 20 | 514 | Groceries & rel. products-wholesale | 884 | |
| 21 | 881 | Private households | 841 | |
| 22 | 591 | Drug stores | 826 | |
| 23 | 481 | Telephone comunications | 783 | |
| 24 | 521 | Lumber & other bldg materials-retail | 738 | |
| 25 | 753 | Automotive repair shops | 708 | |
| 26 | 832 | Social svcs for indiv. & families | 696 | |
| 27 | 262 | Paper mills | na | * |
| 28 | 596 | Nonstore retailers (catalog, mail order) | na | |
| 29 | 241 | Logging | 674 | * |
| 30 | 811 | Legal services | 664 | |
| | | Total Employment in the Subregion | 83,392 | |

Industries with an asterisk (*)_are related to the Wood Products Cluster.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept.

"na" indicates potentially confidential data which has been suppressed.

- Which industries gained the largest number of jobs in the NORTH MOUNTAIN subregion during a recent period?

**TABLE 9**
**Industries in the North Mountain Subregion Reporting the Largest Net Gains in Employment, 1991-94**

| SIC | Description | Net Change Employ. 1991-94 | Average No. Employees per Estab. 1994 | Average Payroll per Employ. 1994* |
|---|---|---|---|---|
| 581 | Eating & drinking places | 901 | 11 | $7,579 |
| 799 | Misc. amusement, rec svcs | 760 | 16 | $10,133 |
| 596 | Nonstore retailers (catalog) | na | | |
| 701 | Hotels & motels | 494 | 12 | $10,507 |
| 531 | Department stores | 399 | 120 | $13,636 |
| 806 | Hospitals | 368 | 357 | $28,161 |
| 805 | Nursing & personal care facilities | 332 | 88 | $14,348 |
| 864 | Civic & social associations | 292 | 8 | $12,574 |
| 801 | Offices & clinics of doctors | 253 | 6 | $32,240 |
| 541 | Grocery stores | 244 | 18 | $17,613 |
| 999 | Nonclassifiable establishments | 238 | 3 | $11,724 |
| 874 | Management & public relations | 227 | 6 | $20,613 |
| 738 | Misc. business services | 209 | 6 | $12,660 |
| 104 | Gold & silver ores | na | | |
| 835 | Child day care services | 179 | 6 | $9,662 |
| 804 | Offices of other health practitioners | 163 | 3 | $16,251 |
| 734 | Services to buildings | 159 | 6 | $11,206 |
| 421 | Trucking & courier svcs, ex air | 153 | 9 | $24,281 |
| 551 | New & used car dealers | 144 | 29 | $27,480 |
| 829 | School & educational svcs, nec | 136 | 10 | $12,696 |
| 839 | Social services, nec | 135 | 11 | $11,764 |
| 636 | Title insurance | 123 | 20 | $26,039 |
| 881 | Private households | 121 | 1 | $7,710 |

| | | | | |
|---|---|---|---|---|
| 632 | Medical svc & health insurance | na | | |
| 802 | Offices & clinics of dentists | 107 | 5 | $21,217 |
| 873 | Research & testing services | 103 | 9 | $17,843 |
| 554 | Gasoline service stations | 103 | 8 | $12,356 |
| 602 | Commercial banks | 101 | 22 | $24,464 |
| 484 | Cable and other pay TV svcs | 98 | 27 | $27,628 |
| 085 | Forestry services | 97 | 9 | $16,871 |

* Quarterly payroll has been annualized.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept.

"na" indicates potentially confidential data which has been suppressed.

- What is the breakdown of employment by the major economic sectors in the CENTRAL MOUNTAIN subregion*?

**TABLE 10**
**Employment by Sector for the Central Mountain Subregion**

| Sector | Employ. 1991 | Employ. 1994 | Percent of Total 1994 | Net Change Employ. 1991-94 |
|---|---|---|---|---|
| Agriculture | 590 | 539 | 1.6% | (51) |
| Forestry and Fishing | 45 | 42 | 0.1% | (3) |
| Mining | 815 | 659 | 1.9% | (156) |
| Construction | 2,528 | 1,620 | 4.7% | (908) |
| Manufacturing | | | | |
| Durable | 1,994 | 2,157 | 6.3% | 163 |
| Nondurable | 695 | 723 | 2.1% | 28 |
| Transp, Utilities | 1,548 | 1,568 | 4.6% | 20 |
| Wholesale | 976 | 970 | 2.8% | (6) |
| Retail | 9,526 | 10,355 | 30.2% | 829 |
| Financial | 2,021 | 1,928 | 5.6% | (93) |
| Services | | | | |
| Personal | 757 | 704 | 2.1% | (53) |
| Business | 3,477 | 3,229 | 9.4% | (248) |
| Tourism-related** | 5,699 | 6,818 | 19.9% | 1,119 |
| Health | 2,701 | 2,795 | 8.2% | 94 |
| Nonclassifiable | 17 | 155 | 0.5% | 138 |
| TOTAL | 33,389 | 34,262 | 100.0% | 873 |

* The Central Mountain subregion includes the Counties of Amador, Calaveras, Alpine, Tuolumne, Mariposa, Mono, and Inyo.

** Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement and Recreational Services (SIC 79).

Source: Based on Es202 data for the 1st Quarters for 1991, 1994 from the California Labor Market Information Division, Employment Development Department.

- Which industries provide the most jobs in the CENTRAL MOUNTAIN subregion?

**TABLE 11**
**Industries with the Largest Employment in the Central Mountain Subregion**

| Rank | SIC | Description | Employment 1994 | |
|---|---|---|---|---|
| 1 | 701 | Hotels & motels | 5,353 | |
| 2 | 581 | Eating & drinking places | 4,183 | |
| 3 | 541 | Grocery stores | 1,536 | |
| 4 | 799 | Misc. amusement, recreational svcs | 1,267 | |
| 5 | 806 | Hospitals | 1,125 | |
| 6 | 242 | Sawmills & planing mills | 999 | * |
| 7 | 531 | Department stores | 808 | |
| 8 | 801 | Offices & clinics of doctors | 612 | |
| 9 | 602 | Commercial banks | 562 | |
| 10 | 594 | Misc. shopping goods stores | 525 | |
| 11 | 152 | Residential building construction | 464 | |
| 12 | 554 | Gasoline service stations | 463 | |
| 13 | 591 | Drug stores | 440 | |
| 14 | 881 | Private households | 428 | |
| 15 | 521 | Lumber & other bldg materials-retail | 351 | |
| 16 | 805 | Nursing & personal care facilities | 348 | |
| 17 | 653 | Real estate agents & managers | 348 | |
| 18 | 104 | Gold & silver ores | 347 | |
| 19 | 802 | Offices & clinics of dentists | 330 | |
| 20 | 421 | Trucking & courier services, ex. air | 328 | |
| 21 | 753 | Automotive repair shops | 276 | |
| 22 | 241 | Logging | 262 | * |
| 23 | 864 | Civic & social associations | 262 | |
| 24 | 836 | Residential care | 250 | |
| 25 | 271 | Newspapers | 248 | |
| 26 | 551 | New & used car dealers | 241 | |
| 27 | 481 | Telephone communications | 239 | |
| 28 | 651 | Real estate operators & lessors | 231 | |
| 29 | 495 | Sanitary services | 222 | |
| 30 | 493 | Combination utility services | 220 | |
| | | Total Employment in Subregion | 34,262 | |

Industries with an asterisk (*) are related to the Wood Products Cluster.
Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept.
"nec" indicates activities not elsewhere classified.

- Which industries gained the largest number of jobs in the CENTRAL MOUNTAIN subregion during a recent period?

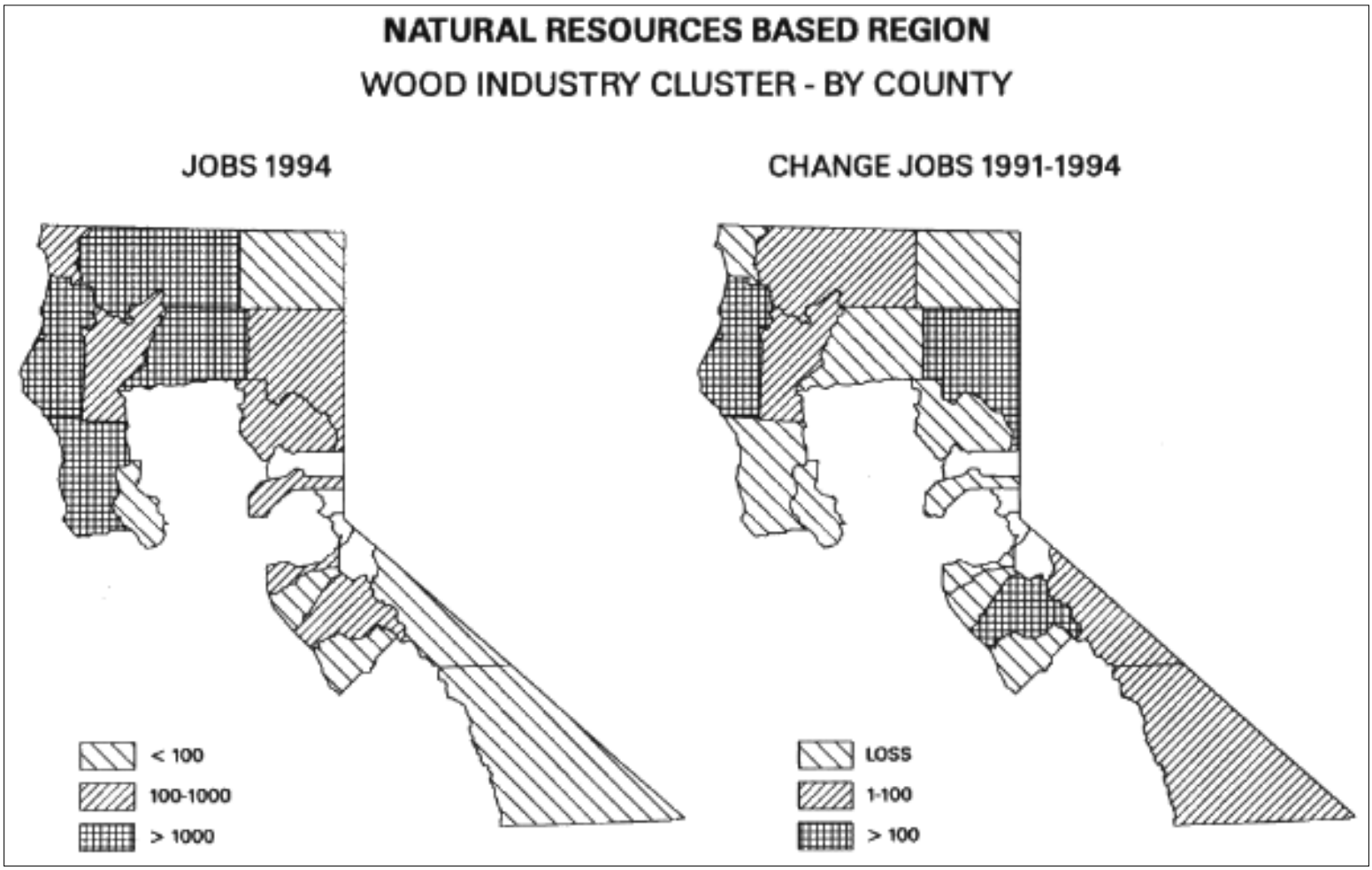
## TABLE 12
## Industries in the Central Mountain Subregion Reporting the Largest Net Gains in Employment, 1991-94

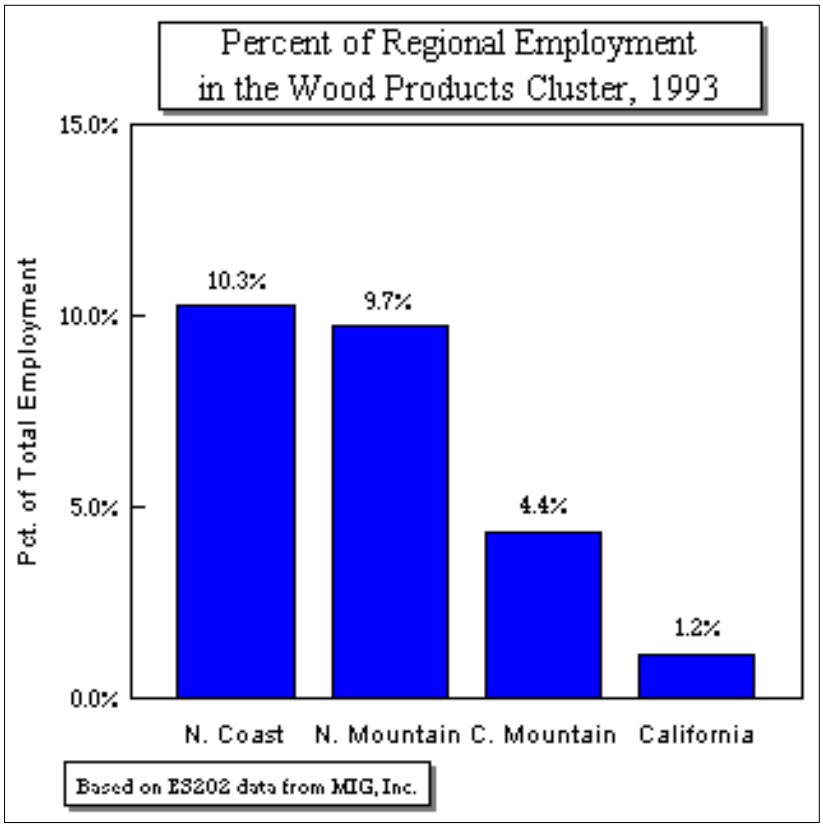
| SIC | Description | Net Change Employ. 1991-94 | Average No. Employees per Estab. 1994 | Average Payroll per Employ. 1994* |
|---|---|---|---|---|
| 799 | Misc. amusement, rec. svcs | 612 | 17 | $11,463 |
| 531 | Department stores | 506 | 135 | $9,398 |
| 701 | Hotels & motels | 436 | 34 | $14,289 |
| 581 | Eating & drinking places | 346 | 10 | $7,773 |
| 999 | Nonclassifiable establishments | 138 | 2 | $19,147 |
| 241 | Logging | 118 | 5 | $25,432 |
| 591 | Drug stores | 102 | 14 | $18,496 |
| 836 | Residential care | 82 | 19 | $20,276 |
| 599 | Retail stores, nec | 67 | 4 | $10,898 |
| 801 | Offices & clinics of doctors | 62 | 6 | $30,933 |
| 362 | Electrical industrial apparatus | na | | |
| 736 | Personnel supply services | 60 | 12 | $10,607 |
| 495 | Sanitary services | 57 | 16 | $22,168 |
| 525 | Hardware stores | 52 | 6 | $11,530 |
| 242 | Sawmills & planing mills | 50 | 111 | $39,285 |
| 802 | Offices & clinics of dentists | 49 | 5 | $21,168 |
| 356 | General industrial machinery | na | | |
| 808 | Home health care services | 48 | 19 | $28,190 |
| 513 | Apparel, piece goods-whlsale | 48 | 10 | $10,169 |
| 541 | Grocery stores | 46 | 15 | $17,109 |
| 411 | Local & suburban transportation | 46 | 10 | $13,504 |
| 835 | Child day care services | 45 | 5 | $8,255 |
| 144 | Sand & gravel | 42 | 32 | $37,422 |
| 366 | Communications equipment | 39 | 30 | $23,275 |
| 519 | Misc. nondurable goods-whlsale | 35 | 5 | $14,395 |

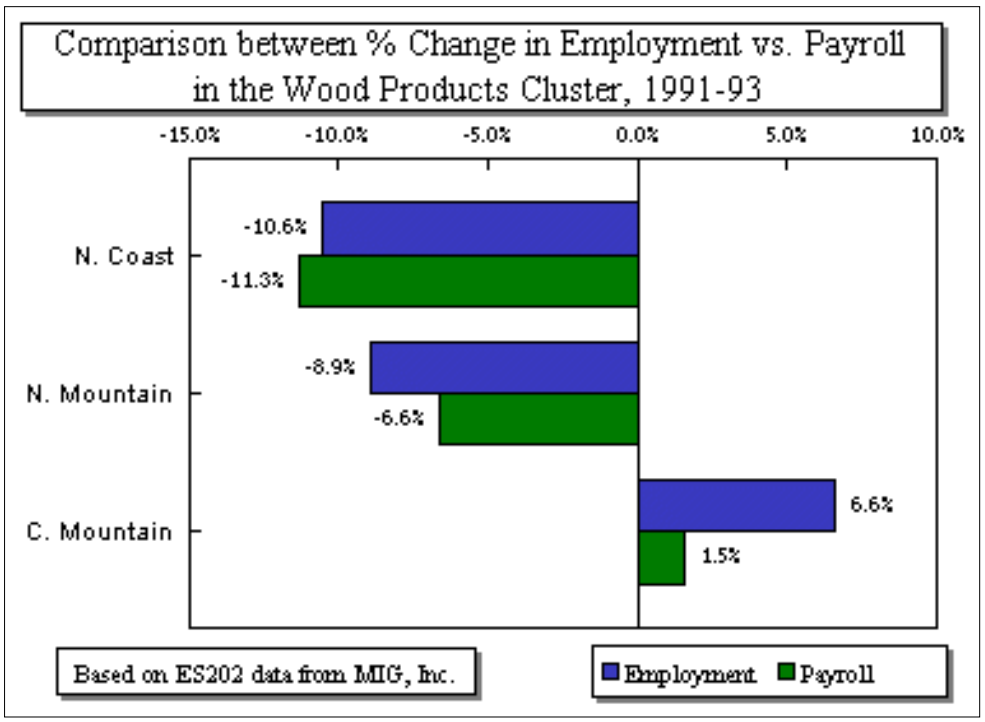
| | | | | |
|---|---|---|---|---|
| 153 | Operative builders | na | | |
| 382 | Measuring & controlling devices | 33 | 15 | $24,171 |
| 594 | Misc. shopping goods | 32 | 5 | $11,142 |
| 679 | Misc. investing | na | | |
| 753 | Automotive repair shops | 32 | 3 | $17,702 |

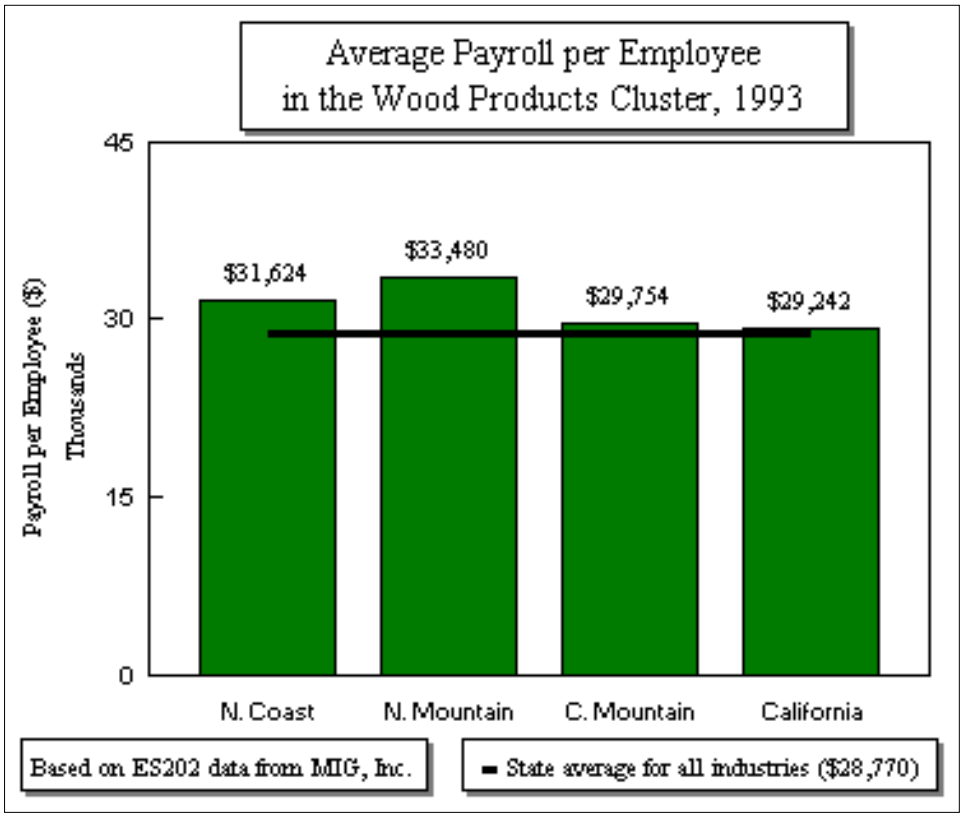
* Quarterly payroll has been annualized.
Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept.
"na" indicates potentially confidential data which has been suppressed.

| Previous Page | The New Economy<br>Addendum II | Next Page |
|---|---|---|

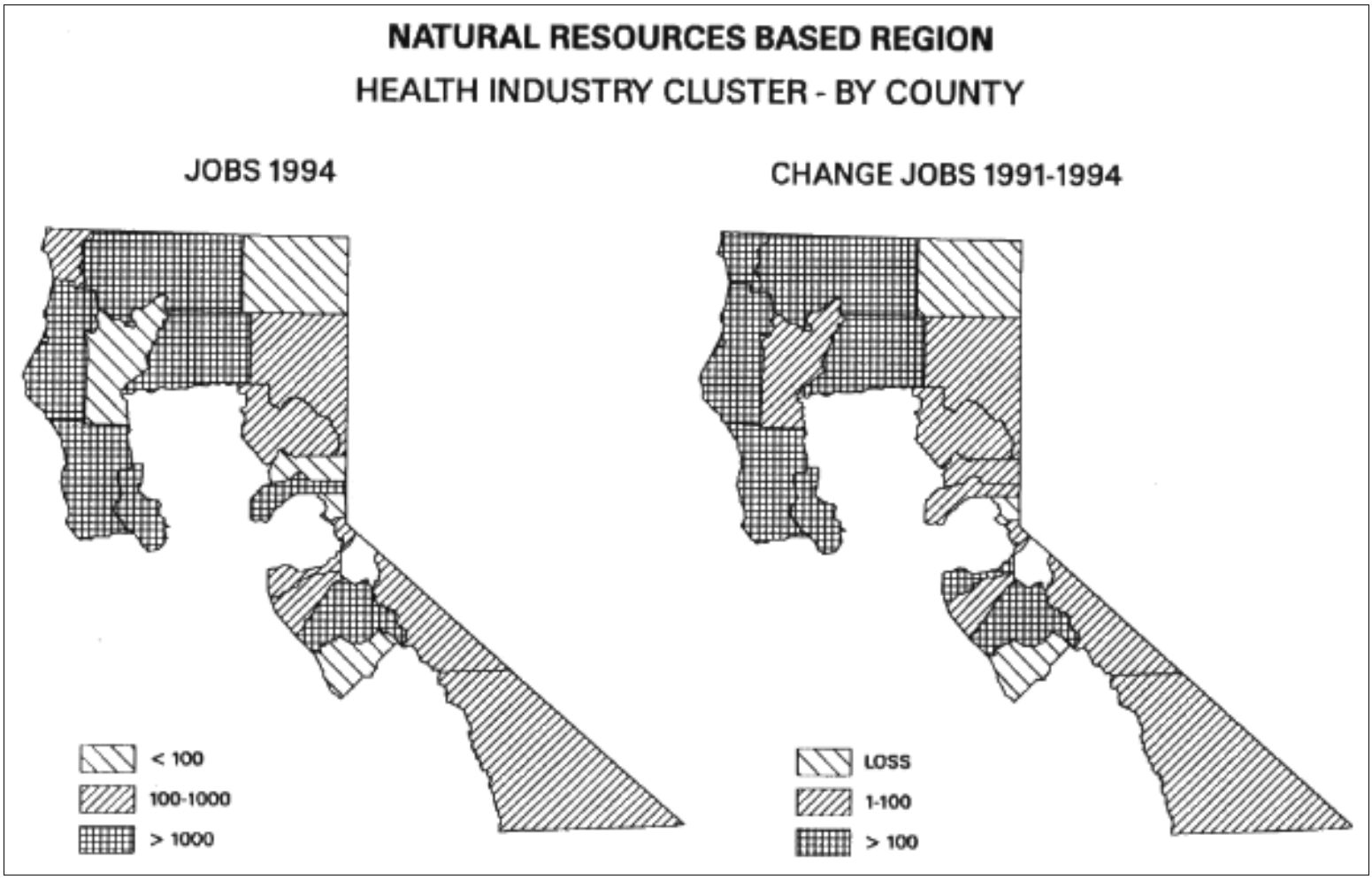


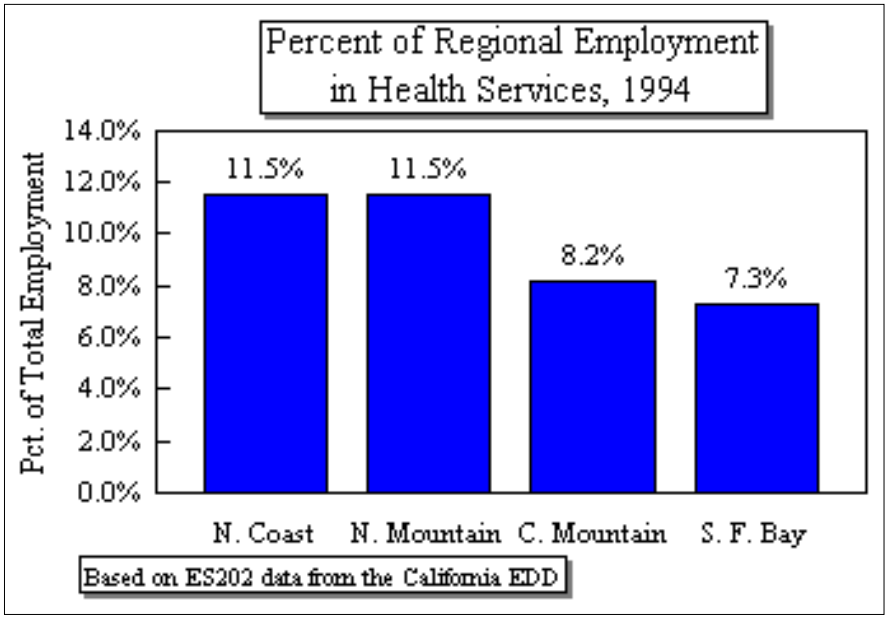

Percent of Regional Employment
in the Wood Products Cluster, 1993
15.0%
10.0%
5.0%
0.0%
Pct. of Total Employment
10.3%
9.7%
4.4%
1.2%
N. Coast
N. Mountain
C. Mountain
California
Based on ES202 data from MIG, Inc.

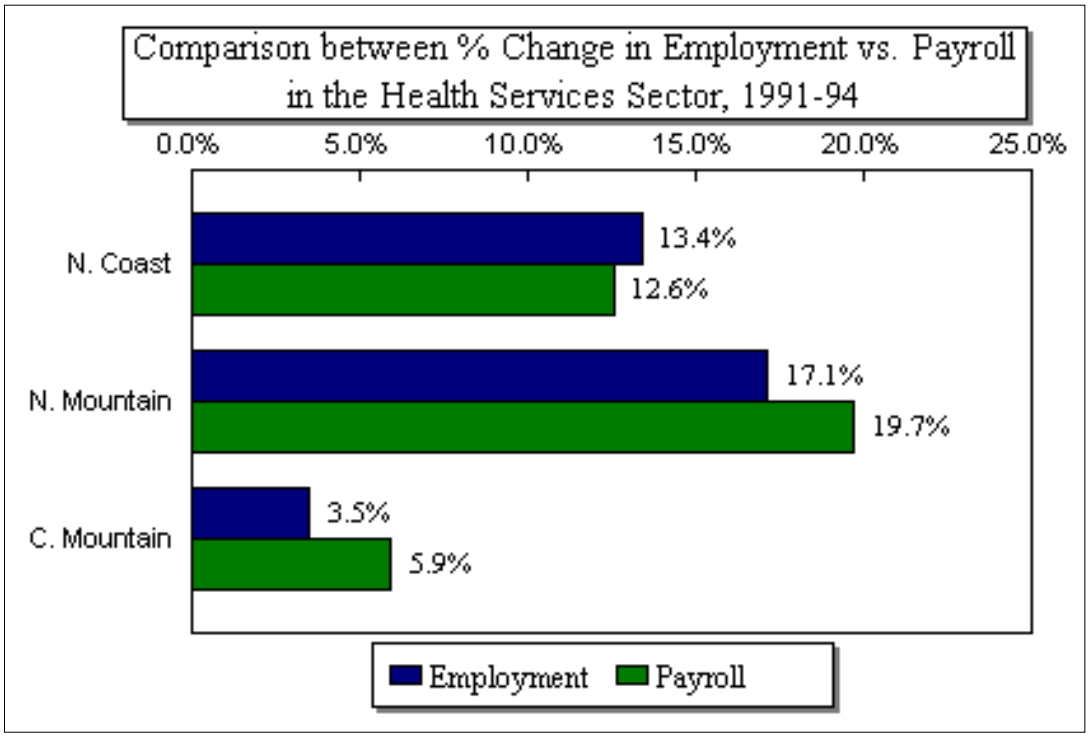

Comparison between % Change in Employment vs. Payroll
in the Wood Products Cluster, 1991-93
-15.0%
-10.0%
-5.0%
0.0%
5.0%
10.0%
N. Coast
-10.6%
-11.3%
N. Mountain
-8.9%
-6.6%
C. Mountain
6.6%
1.5%
Based on ES202 data from MIG, Inc.
Employment
Payroll

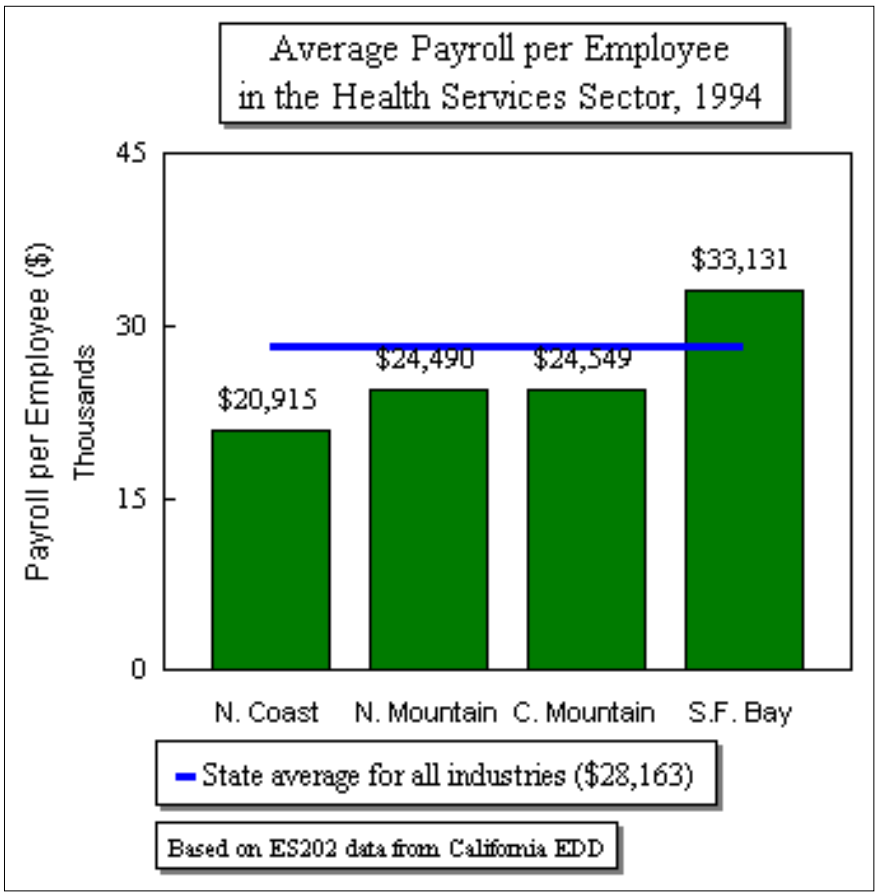

Average Payroll per Employee
in the Wood Products Cluster, 1993
Payroll per Employee ($)
Thousands
45
30
15
0
$31,624
$33,480
$29,754
$29,242
N. Coast
N. Mountain
C. Mountain
California
Based on ES202 data from MIG, Inc.
State average for all industries ($28,770)

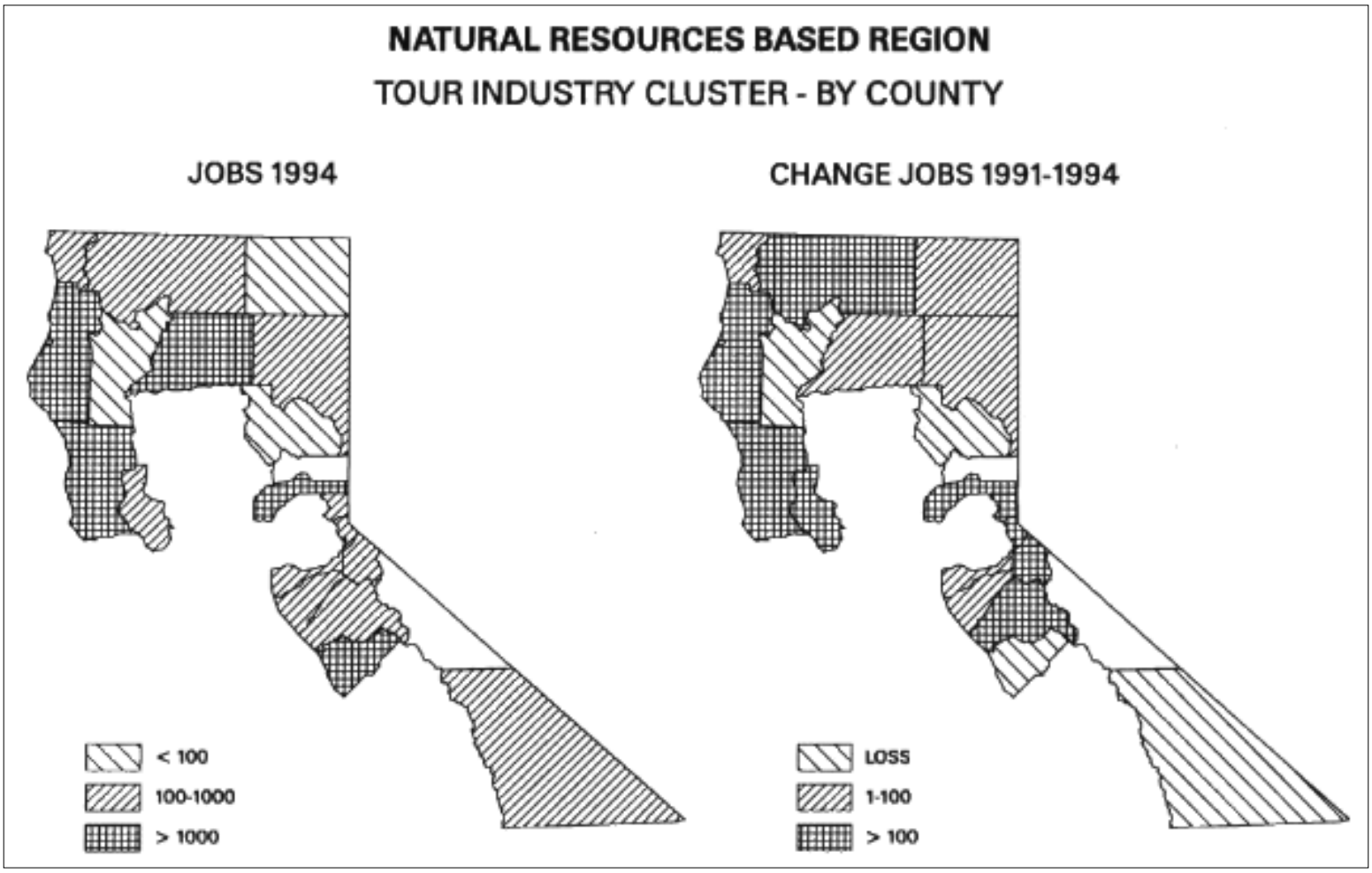
| Previous Page | The New Economy Addendum II | Next Page |
|---|---|---|

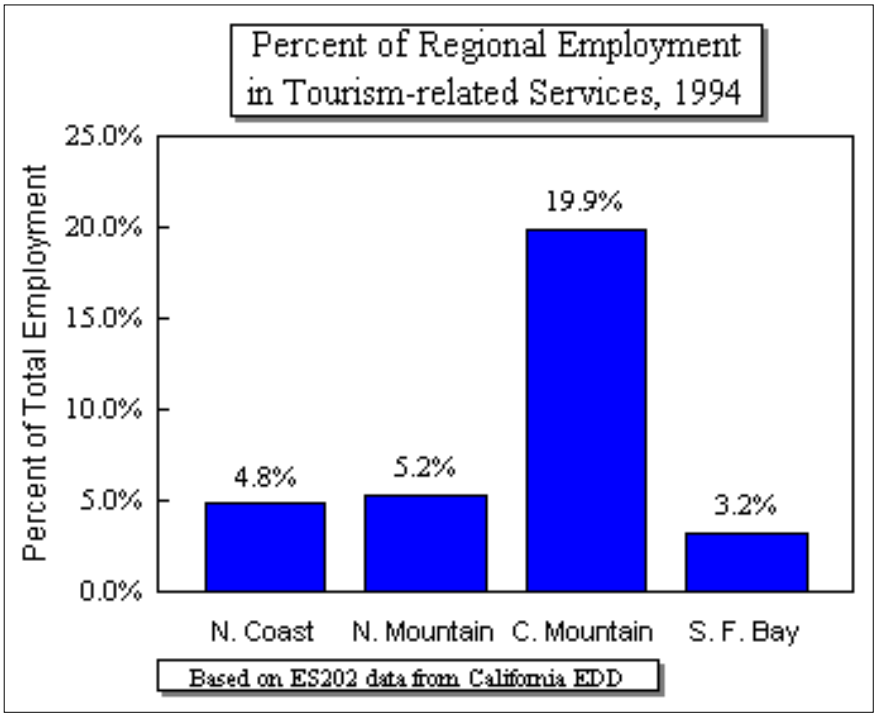


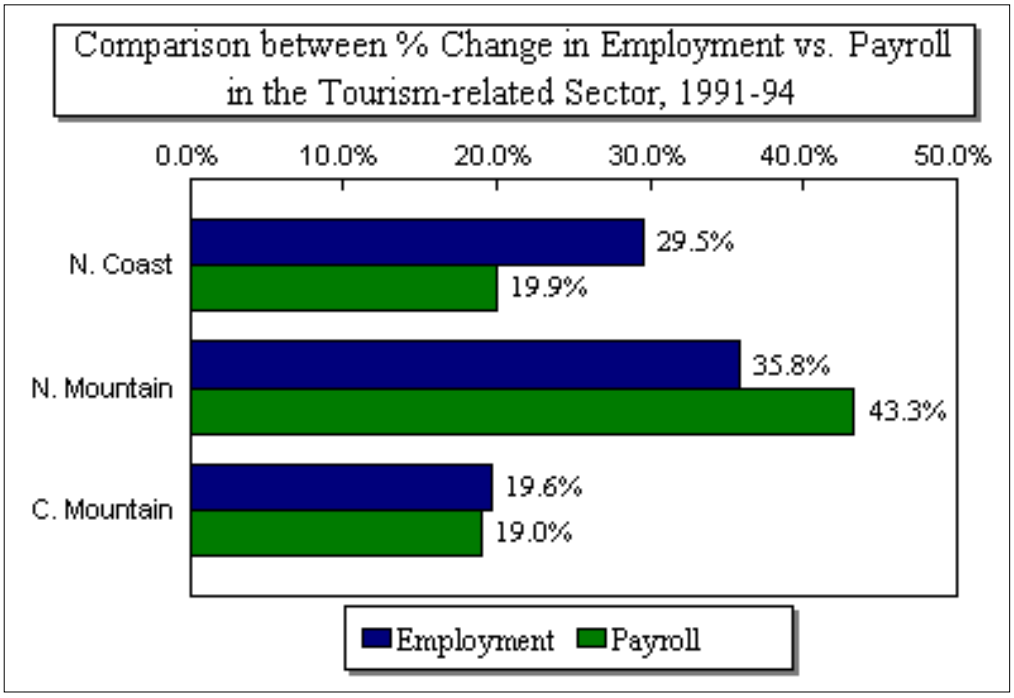



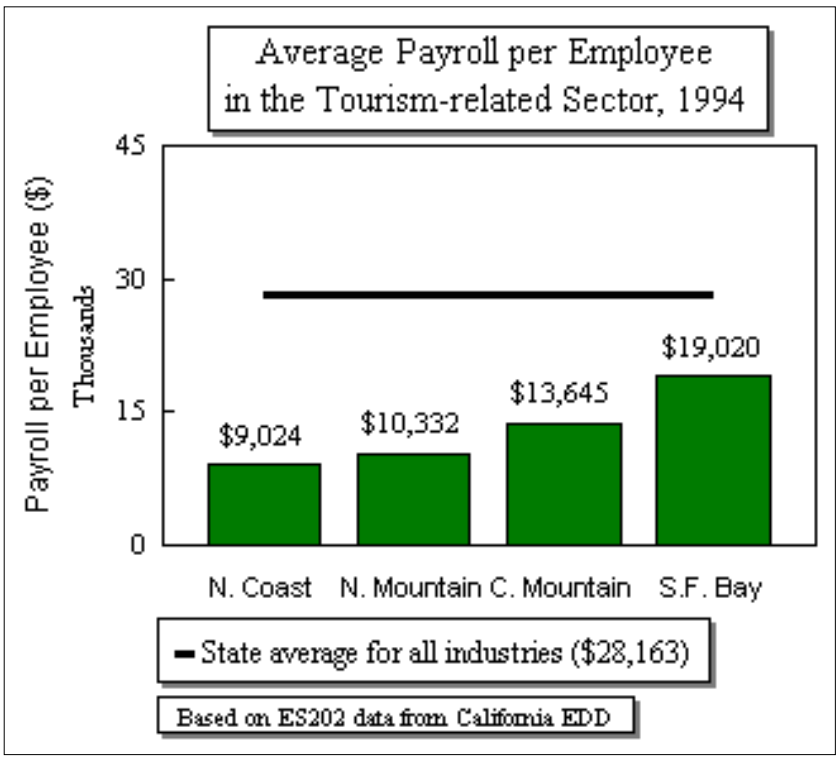

Comparison between % Change in Employment vs. Payroll in the Health Services Sector, 1991-94
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
N. Coast
13.4%
12.6%
N. Mountain
17.1%
19.7%
C. Mountain
3.5%
5.9%
Employment
Payroll


Average Payroll per Employee in the Health Services Sector, 1994
Payroll per Employee ($)
Thousands
45
30
15
0
$20,915
$24,490
$24,549
$33,131
N. Coast
N. Mountain
C. Mountain
S.F. Bay
State average for all industries ($28,163)
Based on ES202 data from California EDD


NATURAL RESOURCES BASED REGION
TOUR INDUSTRY CLUSTER - BY COUNTY
JOBS 1994
< 100
100-1000
> 1000
CHANGE JOBS 1991-1994
LOSS
1-100
> 100


Percent of Regional Employment in Tourism-related Services, 1994
Percent of Total Employment
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
4.8%
5.2%
19.9%
3.2%
N. Coast
N. Mountain
C. Mountain
S. F. Bay
Based on ES202 data from California EDD


Comparison between % Change in Employment vs. Payroll in the Tourism-related Sector, 1991-94
0.0%
10.0%
20.0%
30.0%
40.0%
50.0%
N. Coast
29.5%
19.9%
N. Mountain
35.8%
43.3%
C. Mountain
19.6%
19.0%
Employment
Payroll


Average Payroll per Employee in the Tourism-related Sector, 1994
Payroll per Employee ($)
Thousands
45
30
15
0
$9,024
$10,332
$13,645
$19,020
N. Coast
N. Mountain
C. Mountain
S.F. Bay
State average for all industries ($28,163)
Based on ES202 data from California EDD

# SUMMARY NOTES ON RURAL REGION NATURAL-RESOURCE BASED FORUM

## SESSION ON ENTREPRENEURSHIP

**Summary of trends affecting natural resources-based areas:**

- Changes in resource-based economies (fishing, timber, mining, grazing, agriculture) due to such factors as corporate restructuring, environmental regulations, resource availability and recession;
- Global economic changes, including opening of markets, technology changes and capital shifts;
- Importance of small business for job creation through flexibility to adapt and innovate;
- Migration from urban areas - bringing population growth, new skills, financial resources, but also straining existing infrastructure systems and causing some community values conflicts. While older population groups are coming in, many youth are still leaving due to lack of economic opportunity;
- Transforming industries - innovation in traditional forest products industry; and,
- Growth of entrepreneurship.

Entrepreneurship has been identified by practitioners as a growing phenomenon and of importance to the region in creating new wealth, new job opportunities, meeting unmet needs for goods and services, creating new markets for existing businesses, and contributing to economic base diversification. Entrepreneurship is growing due to:

- Life style changes - i.e., people are moving in from urban areas for a better quality of life
- Technology advances and improvements in telecommunications have allowed many people to be footloose in terms of business location
- Corporate downsizing has created a cadre of skilled professional people who are opting to become entrepreneurs as a solution to job loss in urban areas
- Changes in the way markets work; some companies do not now have to be located close to their markets

Some communities, especially along the Sierra Foothills, are being stressed by rapid population growth and others are being severely stressed by industry decline, especially rural remote communities that are experiencing mill closures. These communities were essentially company towns and the lifestyle was generational. People are not only losing jobs but a way of life. Some communities are also experiencing both decline on traditional economic activity and population growth (e.g., parts of Nevada, Placer, El

Dorado, and Tuolumne Counties).

**What role can entrepreneurship play for this region?**

There are two issues:

How can the region be supported through the transitioning of its economic base (both communities and individuals)?

How can communities and individuals participate in opportunities emerging from the changes cited above?

Entrepreneurship can play a key role as part of a local economic development strategy. The approach is to add value within the community using existing resources.

**Who are the Entrepreneurs?**

Who are they and where are they in the region? Information on entrepreneurs is hard to quantify and hard to obtain. We can't get the self-employed information from the ES202 data, and many counties and rural cities do not keep business license lists or require home-based licenses, where we could being to identify and track. Some home-based operators are part-time, low key, and will never want to transition out of their homes or hire employees. There are some indicators of potential activity which can be used to try to develop a local composite "picture." These include business license lists, chamber of commerce directory, industry associations, county EDC directories, the phone book, clients of SCORE, small business development centers, participants of classes on small business and entrepreneurship through local community colleges, applicants for loans through SBA programs, EDC revolving loan funds, microenterprise funds and clients of incubators.

However, we have no systematic information on who the entrepreneurs are, what they do, what their market relationships are or what they need. What we want to do is understand this phenomenon better so we can reach out to the ones who want to be reached, and improve their rate of success through start-up and increase their viability over the long term. Our research shows that there are many successful entrepreneurs who never participated in any service delivery system. We also want to understand better the components of their success so that we can see what we can take from their experiences, use them as a potential resource to assist other entrepreneurs (mentoring programs and networks) or learn what we could do to accelerate the success of such entrepreneurs.

From our experience, this is what we know about some of the entrepreneurs in the region:

**1. "Indigenous" Entrepreneurs**

These are people already living in the region. They are often home-based and/or small business operators. These include loggers; repair persons; farmers and ranchers involved in tourism and food and beverage products such as wineries and those participating in Apple Hill; tourism and retail services. They are responding to existing and emerging market needs. Some may be dislocated workers. They have a good sense of unmet needs for-local goods and services and a good network of contacts. They tend to lack adequate

capital and knowledge of technical assistance resources, and lack certain business skills.

**2. "Equity Refugees"**

These tend to be either early retirees with money from cashing out a house and/or a business in a urban area, or people who cash out and move to a rural area while moving their businesses with them or starting a new business. Both types are making explicit life style changes. However, the retirees often do not intend to start or buy and operate a business. They intend to retire but often find they are bored or they are creative people who end up creating a product. Move-in entrepreneurs often find it difficult to make the transition to operate a business in a seasonal economy and need to learn how to operate with peaks and valleys of cash flow. People who move to a rural area to start or buy an existing business often lack adequate business experience, and experience failure. What some of these entrepreneurs do have are skills, cash, contacts, and market relationships outside of the region. This is important for businesses which sell goods and services outside of the region.

**3. "Lone Eagles"**

Lone Eagles are next on the evolutionary scale, and can be considered as a subset of equity refugees. According to the Center for the New West, these individuals are skilled professionals who also are making life style changes, but they have high amenity requirements (see attached list). They are very footloose. They are knowledge-based freelance workers and knowledge is their commodity. Because of their specialty, they need excellent telecommunications and technology infrastructure. They are considered to be an asset because they bring high value to a community with low impact, and they take "root" and contribute time and expertise to their community. However, some might consider that they want to change some of the characteristics of their chosen communities to suit their values. Building a strategy around attracting lone eagles by purposefully providing a high amenity base might also be considered by some existing residents to be elitist. Research by the Center for the New West was not able to pinpoint specific concentrations of lone eagles in California, but individuals fitting this profile have been attracted to communities like Mendocino, Nevada, Placer, El Dorado, and Tuolumne Counties.

The attached sheet from an assessment of market potential for an incubator in Tuolurnne County in 1993 profiles the characteristics of some of the entrepreneurs who were identified and interviewed.

**What do Entrepreneurs do?**

As mentioned above, entrepreneurs operate all kinds of businesses. In addition to the ones listed above, we have found the following types of firms, many of which lend themselves to home-based businesses:

- Horticultural/landscaping/design/nurseries, especially specialty items and indigenous species (e.g., drought tolerant plants) Recreation/eco-tourism - hiking, fishing, camping, hunting, skiing, mountain biking, river rafting, snowboarding, climbing, snowshoe and hot springs;

- Catalogue operations;
- Specialty food and beverage products - wineries, beer, brandy, coffees and all kind of foods. Example is the specialty foods in Mendocino County, also marketed through catalogues, farmers markets, local restaurants, bed and breakfast inns and specialty stores linked to the tourism sector. Another example is the Arcata Culinary Food Incubator in Arcata. Apple Hill in El Dorado County is another example;
- Software design;
- Customized manufacturing - wood, plastics, metal fabrication, design and manufacturing of prototypes;
- Retail/business/professional/personal services;
- Silk-screening and other specialty printing;
- Repair and customization of all kinds of items - cars, motorcycles, energy efficient appliances (e.g., wood burning stoves) and aircraft parts; and,
- Recreation equipment and clothing.

The following page includes an example of firms from the Tuolumne County study which show quite a diversity. These rural counties are viable business locations for small, highvalue added or specialized niche-market products. They can compete in the global marketplace with limited demands on space and the environment.

**Fostering Entrepreneurship**

Fostering entrepreneurship is a difficult and elusive process. Much of it happens on its own quite successfully. Can you accelerate success? Given the high rate of failure of start-ups, intervention through incubators, small business support programs have been a proven way to reduce the rate of failure and contribute to success of small businesses over the long term. In rural areas it can be a way-to diversify the local economy to prevent the severe impact of future dislocations, to tap new opportunities, to prevent leakage to areas outside the region and help transition at least some dislocated workers. One thing that seems to help potential and existing entrepreneurs is the creation of a climate that rewards risk-taking behavior and provides appropriate support. The attached article ("Rekindling the Entrepreneurial Spirit," Gregarman, 1991) on creating and entrepreneurial community talks about six basic requirements, including committed leadership. The key points are summarized as follows:

- COMMITTED LOCAL LEADERSHIP. The environment for entrepreneurship is cast by the attitude of local public and private sector leaders. To be successful, the local leadership must create a vision of the community's future that is inspiring and achievable, build broad local support for this vision, take a long-term perspective on development and create a culture of cooperation. This means that the public and private sectors need to work together to build the networks and resources that support entrepreneurs and their ventures. The leaders must also demonstrate the ability to act quickly to support these ventures. Many communities in this region do not have formalized economic development programs or strategies through which such an approach would be developed. In addition, many communities have been in a reactive mode due to the dramatic

economic and community changes many have been experiencing, which limits a more proactive and creative approach to an entrepreneurship strategy.

- ENTREPRENEURIAL TALENT POOL. Obviously, a pool of talented people are needed to start and develop new businesses. This pool includes already operating successful businesses, potential entrepreneurs and business managers, and a skilled network of business professionals who can support venture development. Established entrepreneurs serve as role models and mentors for potential entrepreneurs. There also needs to be a skilled and productive workforce that can match the requirements of new local ventures. While there are many successful entrepreneurs in this region, new business operators and potential employees need to be well trained and have access to ongoing educational resources in order to run and staff competitive businesses. The lack of educational resources in this region was noted. In addition, there are very few formal networks operating in the region, in part due to geographic, climactic, and other factors, and, in part, because the economic development networks also face the same factors.
- KNOWLEDGE ABOUT OPPORTUNITIES. Also critical is the best available information about market opportunities, new technologies, business practices, resources, partners and facilities. One component will be ongoing education about basic business skills, such as planning, marketing, management, staffing and finance as well as providing specialized technical information and training on issues ranging from new technologies to exporting, procurement and so forth. The availability and dissemination of information and technical resources is often fragmented and incomplete in rural areas. Presenters in earlier sessions stressed the need for rural communities to have access to the Internet and have the telecommunications infrastructure in order to access timely information and be competitive with other communities which have easier and more complete access.
- SOURCES OF INNOVATION. Local sources of innovation can be corporate and government research and R&D centers, universities and technical colleges and institutions such as medical centers. These establishments often have researchers and technical staff working on new ideas, technologies and production processes. Partnerships also help advance projects with commercial and test new ideas through prototype development. Dan Ripke's presentation highlighted the fact that there is only one state university in the region (Humboldt State). There are some community colleges in the region which are partnering with businesses and economic development organizations, but commercialization of new technologies, and innovation, is lagging behind other areas of the State in most parts of the region. Collaboration with the federal and state governments on the research coming out the Sierra Nevada Ecosystem Project (SNEP) and the work of the regional biodiversity councils, among other efforts, may provide some valuable information about resource management and value added production. Educational technology could also assist communities and businesses with information resulting in innovation.
- ACCESS TO CAPITAL. Capital is critical to start and grow new businesses, yet start-up capital, especially for small businesses, is usually lacking, especially in rural areas. Organizing equity capital locally, or gaining access to outside sources, such as by setting up a revolving loan fund program, is very important. Some communities organize venture capital networks to meet the need. In the natural resources area, several economic

development organizations are operating revolving loan fund programs. While have they been effective, they are limited by the large service areas they must cover (usually several counties), the size of the loan fund and limited staff. Several counties have no coverage by alternative (i.e., non-commercial bank) institutions.

- COMMUNITYSPIRIT. Civic pride, local image and attitudes, and the quality of life are contributing factors to the decision to start a business. A high quality of life has been the key factor for a large number of businesses relocating to or starting up in the region. Belief in the economic future of the community also stimulate indigenous and new residents to invest in a business. The quality of life in many communities in the region is under strain, due to job and industry loss, rapid population growth, a combination thereof, and the general years of deferred maintenance to public infrastructure, exacerbated by recent budget problems at the state and local levels. These problems relate to water, sewer, and transportation systems, housing, communications systems, the health of forests (fire danger, impacts of drought and infestations, etc.,) and riparian areas and air quality. One problem that communities have is that while there are some state and federal resources available to address some of these issues (although not enough to meet the overall level of need), many communities do not even access these resources because they do not have the staff or the technical expertise to identify resources and prepare funding applications. Nor do they have the money in many cases to hire technical expertise to assist them. The economic development organizations meet some of these needs, but again, their coverage is limited due to their own staffing and resource constraints.

The presence of factors contributes to a "culture" of entrepreneurship. There are certain communities which are well known for this approach, such as Arcata, which experienced multiple impacts on its resource-based economy through the loss of fishing and timber resources. The key is that both the public and private sectors act entrepreneurially.

Individually, most entrepreneurs have needs in the area of capital, space for expanding operations and a range of small business technical assistance. Kenneth Wagner, in his book "Creating Jobs in the 90's," listed 18 areas of technical assistance and skills development that entrepreneurs have. Rather than having individual programs to assist entrepreneurs, what seems to work best is to create an appropriate environment to produce entrepreneurial behavior, and to provide services in combination. Incubators are an example of organizations meeting space, technical assistance, and - sometimes financing assistance. Economic development organizations with lending programs either provide small business counseling or provide referrals to appropriate resources, such as small business development centers, community colleges, or private firms. Other programs are organized specifically to support entrepreneurs.

**WHAT IS THE ROLE OF THE STATE?**

The resources which are required to foster entrepreneurship successfully are very variable in rural California. While much of the intervention can happen only at the local level, there are some things the State can do to support entrepreneurship in this region and contribute to the overall economic health of the State.

1. HELP BUILD THE DATA BASE. The State should assist the communities in the

region to develop techniques and strategies to learn about this phenomenon (who, where, what, how, markets, and needs). This information will not only inform local investment decisions and program design but contribute to the ongoing Economic Strategy Panel process and guide similar decisions at the State level. It could also help link firms and resources across regions.

2. INVEST IN THE HUMANAND PHYSICAL INFRASTRUCTURE OF THE REGION. This includes education, financing, telecornmunications, and more traditional factors such as roads and water and sewer systems. In addition to investment, there should also be a lead State agency, such as the Trade and Commerce Agency, designated to coordinate, leverage, and direct targeted investments in the region.

3. BUILD THE CAPACITY OF THE LOCAL ECONOMIC DEVELOPMENT DELIVERY SYSTEM. If the local delivery system is strengthened, it can reach more new and potential entrepreneurs and provide a more effective and broad- based level of service throughout the region. Financing programs are important but also resources that expand on the range of services that can be provided. Training of the system providers is important, as is linking them to statewide information and technical resources. The system includes economic development organizations, small business development centers, community colleges and chambers of commerce.

4. BUILD THE CAPACITY OF LOCAL COMMUNITIES TO ACCESS INFORMATION, FINANCINC, AND TECHNICAL RESOURCES. State field staff, such as those who operate out of the Trade and Commerce Agency's Sacramento Regional Office, are very valuable resources for communities in terms of resource identification, technical assistance in planning, program development, and implementation, marketing and accessing resources. Adding to these types of staffing resources through other agencies such as the Department of Housing and Community Development, which funds many of the planning, technical assistance, and business/infrastructure development projects in the region, and the Resources Agency, would be very valuable.

5. INCREASE RESEARCH AND 1 VFORMATION DISSEMINATION ON RURAL ECONOMIC DEVELOPMENT AND ENTREPRENEURSHIP. Information dissemination on case studies, program models, and program approaches which have been effective in economic diversification and entrepreneurship efforts would be of great value. At present, much of this information is not reaching communities in any consistent way. Researching these areas would also provide value to state planning and program development efforts, since some states, especially those in the Northwest, have devoted considerable resources to issues of similar concern.

6. SUPPORT THE DEVELOPMENT OF SMALL BUSINESS NETWORKS. An issue summary recently released by the California Research Bureau ("Small Business Networks: Tools to Promote Economic Success," Koehler, 1995) describes the importance of small business to the California economy and the strategy of using small business networks to reduce failure rates and increase competitiveness. Since small firms typically do not have the resources to build internal and external networks, government

can serve an effective role as a facilitator. Many other countries have long term small business network development programs which they either actively promote, or encourage through their social and economic.infrastructure. The State does not have a targeted small business network development program. Although the Small Business Development Center (SBDCs) Program can assist interested businesses, a formal network has not been developed. Privately initiated networks have been created in some urban areas. Several recent studies have recommended the adoption of small business networks and other collaborative approaches to improve the economy. Networks in Washington and Oregon have been particularly helpful in assisting rural resource-based communities. One approach is for the State to develop informational materials to be distributed on a variety of venues, and to actively endorse the formation of networks through the SBDC program. Incentives are also a way to promote the formation of networks, with privatization as a goal. Some states use challenge grants or tax incentives; loan or loan guarantees could also be use to start a pilot. The Issue Summary includes other recommendations, including the establishment of a networking data base.

The following questions were posed to the Entrepreneurship Panel for discussion:

- What contributes to a business success when the business does not use the service delivery system? (Did they have better skills, contacts, resources, etc.?)
- Who are the entrepreneurs and what are their characteristics?
- What opportunities for entrepreneurship do you see in this region?
- What are the extent of linkages with urban centers and global trade?
- What is the use of and need for telecommunications capacity?
- Is there a role for the State?

**Panel Discussion**

Most of the business owners moved to the area within the last 8 years, primarily for quality of life reasons. Some deal with state agencies and could have been located in Sacramento, but with telecomunications, can be more footloose. They moved from urban areas; one was a dislocated workers who lost his job in the Silicon Valley during the recession. Joe Castelli of Reform Automation Systems had developed an innovative product but could not find backing and became dependent on the food bank as a last resort. He received assistance from the Sierra College Small Business Development Center which led to his first contract and he now has a very successful business. He and Kris Anderson-Moore are both home-based. Joe has several people he has trained and with whom he contracts (outsourcing). They are primarily women who want to remain at home and work part-time since they have children. All emphasized a concern that the growth of the region may threaten the quality of life which is such a dominant factor in their location decision

As a preface to the discussion, Lucy Blake from the Sierra Business Council presented a summary of findings from a survey of her membership. These businesses are those committed to long term viability of the region who are seeking both financial success and maintenance of environmental quality.

Comments:

**QUALITY OF LIFE:**

Historic Preservation in towns such as Nevada City are a key attraction - the visual appeal of communities and the link to their history.

There is a trade-off between peace of mind versus isolation and proximity to others.

Ability to be with family.

Beauty of the area.

Many concerns were expressed about the need for adequate planning to manage growth and land use development so that the quality of life was retained and land was available to agricultural activity, including the growing winery industry.

**EDUCATION:**

There is a highly educated populace.

Many young people are forced to leave the area due to lack of educational opportunity, and then do not return (brain drain). The lack of higher education facilities (only one in the region) means that the natrual resources region is exporting qualified students to other parts of the State.

Access to community colleges is important.

Working with mentors is important.

K-12 busing costs rural areas 15% of their ADA funds.

With the decrease in timber revenues, there is a decrease in funds for K-12 education (and roads) from reimbursement funds from the Forest Service back to communities (of 300 K-12 teachers, 40 were laid off).

Small business entrepreneurship skills need to be taught in the school system (we shouldn't be training people to be lifelong employees, but rather the skills to carry them through the changes which are coming; to teach youth to think entrepreneurially in terms of themselves). This process should start in junior high. It is not a learning paradigm we are now using, but is reflected in the School-to-Career effort.

**WORKFORCE/FRAINING**

Many businesses are sole proprietors with small or no staff.

The community colleges are charging students with four-year degrees more for continued retraining, which is a disadvantage and disincentive.

Schools are training students to "work for" (employees) versus teaching entrepreneurship (see above).

Need self-directed/internal training.

Use "downsized/displaced" workers from other fields (such as Joe's business) and use them as a flexible work force; meets worker's need and employer's need, but employer may need to train subcontractor.

**INFRASTRUCTURE:**

Water availability is a big issue. Water is being exported while the region is not being adequately compensated, and water rights are not always available. Using water for new growth can possibly hurt existing businesses which depend on water (such as agricultural operations) during drought years. Oversubscription of water is already being permitted. People stressed the link between having urban users understand where their water is coming from and the impact the use is having on rural areas.

Importance of fire protection, including fuel source reduction and other forest management practices, was emphasized. If major burns occur, riparian areas will be destroyed and water quality and supply for urban areas damaged.

Need investment in transportation systems to be able to handle tourism demands.

Need parity in telecommunications services.

Need for a standard database structure (public and private).

Need high technology equipment requiring large capital outlays.

**CAPITAL:**

Many who come into the region bring capital in, which is enough to start a business but not enough for growth; they are having trouble finding money for expansion.

**WHAT ARE CRITICAL SUCCESS FACTORS FOR ENTREPRENEURS?**

- Available business services
- Importance of the Small Business Development Centers. The Trade and Commerce Agency should invest in and expand the program.
- Natural resource areas should not tied to local markets, but to statewide, national and internationa markets. Need to provide communities with equal access to telecommunications and information data bases so that businesses have equal opportunity to compete.
- Do not wait for government assistance - motivate themselves to take action.
- State could undertake streamlining efforts in the way state agencies collect and maintain data. This would present better opportunities for small businesses to be competitive in state procurement efforts, and also make it easier for businesses to assess and use information.
- State could take a stronger hand in bringing counties and communities to complete their General Plans and growth management strategies to provide a better framework for managed development and protection of quality of life.

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Sacramento Valley
Economic Region
TEHAMA
RURAL VALLEY
BUTTE
GLENN
YUBA
COLUSA
SUTTER
PLACER
YOLO
EL DORADO
SACRAMENTO
METRO

# SUMMARY

## BACKGROUND

The economic base analysis for the Sacramento Valley Region was intended to provide members of the State Strategy Panel and participants of the Regional Forum with a statistical picture of the region's economic structure and recent trends. The primary database for the study was ES202 provided by the Labor Market Information Division of the California Employment Development Department. At the time this project was initiated, the most accurate and consistent series of employment data available was for the period from 1991 to 1994. Since the State Strategy effort is intended to promote long-term economic monitoring at the state and regional levels, the relatively short time series presented in this study will be added to and further developed over time. The economic base analysis highlights three of the Sacramento Region's many industrial clusters--Agricultural Production/Food Processing, Electronics, and Health-related Manufacturing and Services.

## KEY FINDINGS FROM THE ECONOMIC BASE ANALYSIS

### Changes in the Location of Employment

- The Sacramento Valley Region gained more than 3,400 private-sector jobs during the recessionary period 1991-94. Over this same interval, the State of California as a whole lost more than 452,500 jobs.
- Both the Metro Sacramento and Rural Valley subregions experienced job increases. The increases were proportionally similar: +0.6% in the case of Metro Sacramento and +0.9% in the Rural Valley.
- At the County level, there were clear differences in employment trends. Placer (west), Yolo, Sutter, and Tehama Counties experienced significant job increases. Placer (west) and Yolo added more than 4,000 jobs to their respective economies between 1991-94. Sutter and Tehama each added more than 1,000 jobs.
- Meanwhile, Sacramento, Butte, Colusa, and Yuba Counties lost jobs. Sacramento County experienced the largest net decrease (-6,233 jobs), while Yuba County experienced the largest percentage decrease (-7.5%).
- These changes did not shift the balance of jobs between metro and rural subregions. In 1991 and 1994, the Metro Sacramento subregion contained 82.1% of total jobs in the region and the Rural Valley subregion contained the balance of 17.9%.
- The most significant spatial redistribution over this period was a slight decrease in the proportion of jobs in Sacramento County--from 63.4% to 61.7%. And slight increases in both Placer and Yolo Counties, a pattern indicating some degree of decentralization.

**Changes in Earnings**

- Approximately two-thirds of the region's private-sector payroll is generated by Sacramento County. In 1994, Sacramento County's share of the regional payroll was 65.9%, while its share of the region's employment was 61.7%. The high earnings-to-jobs ratio indicates that Sacramento County has a larger concentration of better paying jobs.
- Between 1991 and 1994, private-sector payroll increased in five out of the ten counties in the region. The largest gains were experienced in Yolo (+12.0%), Placer (+10.7%), Sutter (+10.4%), and El Dorado (+8.5%) Counties.

**Employment by Sector**

- The distribution of employment across industrial categories is roughly similar between the Metro Sacramento subregion and the Rural Valley subregion, except in two areas. In 1994, Agriculture constituted a sizeable 11.5% of private sector employment in the Rural Valley, compared to only 2.1% in Metro Sacramento. Metro Sacramento, on the other hand, had relatively large proportions of employment in Finance, Insurance, and Real Estate (10.3%) and Business and Other Services (17.7%).
- Metro Sacramento had a higher share of employment in FIRE than the state as a whole. In Metro Sacramento, FIRE employment constituted 10.3% of the total in 1994, while the comparable percentage at the state level was 7.9%.
- Both Metro and Rural Sacramento had proportionally higher levels of employment in Retail Trade and Health Services compared to the state. Indeed, about one in four private sector jobs in the Sacramento Region was in retail, while one in five jobs in the state was in retail. Health Services was the second largest sector in the Rural Valley subregion, while Business and Other Services was the second largest sector in Metro Sacramento.
- Both Metro and Rural Sacramento had proportionally lower levels of employment in Durable and Nondurable Manufacturing compared to the state. In 1994, manufacturing constituted 17.1% of the state's private-sector economy; however, it was 12.1% of the Rural Valley economy and 9.4% of the Metro Sacramento economy.
- Between 1991 and 1994, Nondurable Manufacturing jobs grew in both the Metro and Rural subregions of Sacramento, with a net increase of 835 jobs. Durable Manufacturing jobs decreased in both subregions for a net decrease of 790 jobs.
- In Metro Sacramento, the strongest growth sectors in the 1991-94 period were Transportation, Communications, and Utilities (+2,761 jobs); Finance, Insurance, and Real Estate (+3,435 jobs); Health Services (+3,716 jobs); and Business and Other Services (+5,191 jobs). These four sectors collectively accounted for an increase of 15,103 jobs. The sectors losing the largest numbers of jobs included Construction (-5,402 jobs); Wholesale Trade (-3,410 jobs); and Retail Trade (-3,142 jobs).
- In Rural Sacramento, the strongest growth sectors in the 1991-94 period were

Health Services (+1,358 jobs); Agriculture (+710 jobs); and Retail Trade (+438 jobs), collectively accounting for an increase of 2,506 jobs. The sectors losing the largest numbers of jobs included Construction (-1,402 jobs); Wholesale Trade (-391 jobs); and Durable Manufacturing (-283 jobs).

**Leading Industries**

- In 1994, the largest industry in Metro Sacramento was Eating and Drinking places which employed more than 39,600 persons. The second largest category was Hospitals with employment exceeding 15,500. Several industries related to business services are among the 30 largest employers, including Personnel Supply Services, Computer & Data Processing Services, Services to Buildings, and Misc. Services. Metro Sacramento also has concentrations of employment in other professional and white-collar industries, notably: Management & Public Relations, Legal Services, Insurance, Real Estate, Accounting & Bookkeeping, and Engineering & Architectural Services. Only one manufacturing industry appeared in the Top 30 list, namely Electronic Components and Accessories with 4,729 employees.
- The same two industries appeared on the Rural Valley list of top employers: Eating and Drinking Places (8,958 jobs) and Hospitals (5,698 jobs). Also prominent on the Rural Valley list are industries linked to Agriculture: Fruit and Tree Nuts, Cash Grains, Crop Services, Farm Labor & Management Services, and Preserved Fruits and Vegetables.

**Largest Net Gains in Employment**

- Business, professional and personal services accounted for most of the employment growth in the Metro Sacramento subregion, with Telephone Communications accounting for a net increase of 2,166 jobs between 1991 and 1994. Mortgage Bankers & Brokers, Misc. Amusement, Personnel Supply Services, and Management & Public Relations contributed another 6,435 jobs.
- Three Metro Sacramento manufacturing industries were among those reporting the largest net gains in employment, including Electronic Components & Accessories (+ 993 jobs), Sugar & Confectionary Products (+845 jobs), and Pharmaceutical Drugs (+472 jobs).
- In the Rural Valley subregion, the largest net employment gain occurred in Department Stores (+944 jobs). Two other industries--Hospitals and Nursing & Personal Care Facilities--together added 1,087 jobs. Six of the top 30 growth industries were in agriculture--indicating the continued strength of this sector. Five of the top 30 were in manufacturing, ranging in products from Paperboard Containers & Boxes to Millwork & Plywood to Motor Vehicles, Measuring & Controlling Devices, and Medical Instruments & Supplies.

**Payroll Size and Increases**

- In the Metro Sacramento subregion, the Electronic Components & Accessories industry experienced the largest net gain in payroll between 1991 and 1994. The annualized payroll for this industry increased by more than $42.5 million.

Electronic Components is also notable for very high average earnings of $70,223 in 1994. In comparison, payroll gain in the second largest industry--Telephone Communications--was half as much ($21.4 million). Other industries showing large gains were Mortgage Banking, Doctor's Offices & Clinics, Hospitals, and Management & Public Relations firms.

- Hospitals showed the largest net gain in payroll in the Rural Valley subregion. Between 1991 and 1994, hospitals' payroll increased by $7.13 million on an annualized basis. The payroll increase by hospitals was twice as much as the second-place industry, Fruit and Tree Nut Production, which increased its payroll by $3.35 million. Other industries showing large payroll gains were Department Stores, Nursing & Personal Care Facilities, and Paperboard Containers & Boxes.

***The economic base analysis suggested the regional importance of three industries that were examined in greater depth: Agricultural Production/Food Processing, Electronics, and Health-related Manufacturing & Services.***

**Agricultural Production/Food Processing**

- In 1994, there were 19,173 jobs in Agricultural Production throughout the Sacramento Valley Region. Of this total, 45.5% of the agricultural jobs were located in the Metro subregion, while 54.5% were located in the Rural Valley subregion. In addition, there were 9,913 jobs in Food Processing. Distribution of the manufacturing jobs was more highly skewed, with 70.5% located in the Metro subregion and 29.5% located in the Rural Valley subregion.
- Agricultural Production and Food Processing is a particularly significant part of the Rural Valley subregion where it constituted 14.4% of total private-sector employment in 1994. In comparison, this industrial group comprised 3.7% of total employment in the Metro Sacramento subregion and 5.1% of total employment in the state.
- The two subregions saw divergent trends between 1991 and 1994. In the Metro Sacramento subregion, agriculture jobs decreased, while food processing jobs increased. In contrast, agriculture jobs increased in the Rural Valley subregion, but food processing jobs declined.
- The difference in value added between Agriculture vs. Food Processing is clearly reflected in calculations of average earnings. In Food Processing, 1994 average earnings was $30,787 in the Metro subregion and $23,059 in the Rural Valley subregion. In comparison, average earnings for Agricultural Production in both subregions was in the $14,500 range.

**Electronics Industry**

- Employment in Electronics is concentrated in the Metro Sacramento subregion, particularly Placer and Sacramento Counties. Butte County is the only rural county with significant electronics activity.
- Electronics employment in the region overall experienced a net increase of approximately 1,660 jobs between 1991 and 1994.
- Some of the highest average earnings are found in electronics. For example, the

Electronic Components & Accessories industry had average earnings of $70,223 in 1994, and the Computer and Office Equipment industry had average earnings of $48,272.

**Health-Related Manufacturing & Services**

- Health-related industries comprise a significant part of the regional economy. For the region as a whole, 11.2% of all private-sector jobs were in health services or the manufacture of health products. In comparison, 8.7% of total state employment was related to health services or manufacture.
- Between 1991 and 1994, the region added 5,275 health-related jobs. 72.4% of the increase occurred in the Metro Sacramento subregion and 27.6% of the net employment gains occurred in the Rural Valley subregion.
- Although employment is increasing in health-related manufacturing (including Medical & Dental Equipment & Supplies and Drugs), the employment growth in health services has been predominant.
- There was no significant difference in average earnings between manufacturing and services jobs in the health field. However, there was a difference of several thousand dollars between Metro and Rural subregions. In the Metro subregion, average earnings was approximately $30,500 in 1994, whereas average earnings in the Rural subregion was $24,600.

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- How many jobs are located in the Sacramento Valley region, and how are they distributed across the counties?
- How did the employment levels fare during the 1991-94 recession period?

**TABLE 1**
**Economic Overview of the Sacramento Valley Region and Recent Changes: EMPLOYMENT**

| County | Avg. Quarterly Employment 1991 | Avg. Quarterly Employment 1994 | Net Change Employment 1991-94 | Pct. Change Employment 1991-94 |
|---|---|---|---|---|
| El Dorado (west slope) | 12,540 | 13,131 | 591 | 4.7% |
| Placer (west slope) | 38,927 | 43,053 | 4,126 | 10.6% |
| Sacramento | 325,443 | 319,210 | (6,233) | -1.9% |
| Yolo | 44,981 | 49,071 | 4,090 | 9.1% |
| **Metro Sacramento** | **421,891** | **424,465** | **2,574** | **0.6%** |
| Butte | 48,163 | 47,725 | (438) | -0.9% |
| Colusa | 4,355 | 4,293 | (62) | -1.4% |
| Glenn | 5,238 | 5,280 | 42 | 0.8% |
| Sutter | 14,445 | 15,500 | 1,055 | 7.3% |
| Tehama | 9,277 | 10,310 | 1,033 | 11.1% |
| Yuba | 10,326 | 9,551 | (775) | -7.5% |
| **Rural Valley** | **91,804** | **92,659** | **855** | **0.9%** |
| **REGIONAL TOTAL** | **513,695** | **517,124** | **3,429** | **0.7%** |
| **Region % of State** | **4.8%** | **5.1%** | | |
| **CALIFORNIA** | **10,597,473** | **10,144,936** | **(452,537)** | **-4.3%** |

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department

- What level of earnings are generated by the county and regional economies?
- How was payroll affected during the 1991-94 period, and how did payroll changes vary by county?

**TABLE 2**
**Economic Overview of the Sacramento Valley Region and Recent Changes: PAYROLL**

| Area | Avg. Quarterly Payroll ($ mil.) 1991 | Avg. Quarterly Payroll ($ mil.) 1991 (adj.*) | Avg. Quarterly Payroll ($ mil.) 1994 | Net Change Payroll ($ mil.) 1991-94 | Pct. Change Payroll 1991-94 |
|---|---|---|---|---|---|
| El Dorado (west slope) | 56.38 | 62.12 | 67.40 | 5.28 | 8.5% |
| Placer (west slope) | 206.25 | 227.26 | 251.49 | 24.23 | 10.7% |
| Sacramento | 1,867.74 | 2,058.08 | 2,003.72 | (54.35) | -2.6% |
| Yolo | 241.46 | 266.06 | 297.87 | 31.81 | 12.0% |
| **Metro Sacramento** | **2,371.82** | **2,613.53** | **2,620.49** | **6.96** | **0.3%** |
| Butte | 200.04 | 220.43 | 214.35 | (6.08) | -2.8% |
| Colusa | 19.12 | 21.07 | 19.45 | (1.63) | -7.7% |
| Glenn | 22.45 | 24.74 | 23.92 | (0.82) | -3.3% |
| Sutter | 62.89 | 69.30 | 70.38 | 1.08 | 1.6% |
| Tehama | 37.96 | 41.82 | 46.19 | 4.37 | 10.4% |
| Yuba | 49.81 | 54.89 | 46.97 | (7.92) | -14.4% |
| **Rural Valley** | **392.28** | **432.26** | **421.26** | **(11.00)** | **-2.5%** |
| **REGIONAL TOTAL** | **2,764.10** | **3,045.78** | **3,041.75** | **(4.04)** | **-0.1%** |
| **Region % of State** | **4.0%** | **4.0%** | **4.3%** | | |
| **CALIFORNIA** | **69,001.00** | **76,032.63** | **71,429.00** | **(4,603.63)** | **-6.1%** |

*Adjusted to 1994 dollars using the Consumer Price Index.

Source: Based on ES202 data for the 1st Quarters of 1991, 1994 from the California Labor Market Information Division, Employment Development Department

- What is the breakdown of employment by the major economic sectors in the subregions?
- How does it compare to the economy of the state as a whole?

**TABLE 3**
**Percent Employment in Each Sector by Subregion and Comparison with the State, 1994**

| Sector | Rural Valley | Metro Sacramento | California |
|---|---|---|---|
| Agriculture | 11.5% | 2.1% | 3.5% |
| Forestry/Fishing | 0.1% | 0.0% | 0.0% |
| Mining | 0.1% | 0.1% | 0.3% |
| Construction | 4.1% | 5.8% | 4.3% |
| Manufacturing | | | |
| Durable | 6.4% | 5.5% | 10.5% |
| Nondurable | 5.7% | 3.9% | 6.6% |
| Transp, Utilities | 5.1% | 6.3% | 5.8% |

| | | | |
|---|---|---|---|
| Wholesale | 4.1% | 6.1% | 6.8% |
| Retaile Trade | 27.7% | 25.5% | 20.6% |
| Financial, Insurance, Real Estate | 6.0% | 10.3% | 7.9% |
| Services | | | |
| Personal | 3.0% | 3.2% | 2.8% |
| Business and Other | 11.3% | 17.7% | 19.0% |
| Tourism-related* | 2.2% | 2.4% | 3.3% |
| Health | 12.5% | 10.6% | 8.1% |
| Nonclassifiable | 0.3% | 0.4% | 0.5% |
| TOTAL | 100.0% | 100.0% | 100.0% |

* Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement and Recreational Services (SIC 79).

Source: Based on ES202 data for the 1st Quarters of 1991, 1994, fromt he California Labor Market Information Divison, Employment Development Department.

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- What is the breakdown of employment by the major economic sectors in the METRO SACRAMENTO subregion?

**TABLE 4**
**Employment by Sector for the Metro Sacramento Subregion***

| Sector | Employ. 1991 | Employ. 1994 | Percent of Total 1994 | Net Change Employ. 1991-94 |
|---|---|---|---|---|
| Agriculture | 9,201 | 8,729 | 2.1% | (472) |
| Forestry | 29 | 30 | 0.0% | 1 |
| Fishing | 75 | 87 | 0.0% | 12 |
| Mining | 888 | 604 | 0.1% | (284) |
| Construction | 30,127 | 24,725 | 5.8% | (5,402) |
| Manufacturing | | | | |
| Durable | 23,805 | 23,298 | 5.5% | (507) |
| Nondurable | 16,142 | 16,741 | 3.9% | 599 |
| Transp, Utilities | 23,822 | 26,583 | 6.3% | 2,761 |
| Wholesale | 29,457 | 26,047 | 6.1% | (3,410) |
| Retaile Trade | 111,444 | 108,302 | 25.5% | (3,142) |
| Financial | 40,246 | 43,681 | 10.3% | 3,435 |
| Services | | | | |
| Personal | 13,785 | 13,576 | 3.2% | (209) |
| Business and Other | 69,943 | 75,134 | 17.7% | 5,191 |
| Tourism-related** | 11,011 | 10,359 | 2.4% | (652) |
| Health | 41,362 | 45,078 | 10.6% | 3,716 |
| Nonclassifiable | 554 | 1,491 | 0.4% | 937 |
| TOTAL | 421,891 | 424,465 | 100.0% | 2,574 |

* The Metro Sacramento subregion includes the Counties of Sacramento and Yolo, and the western portions of El Dorado and Placer Counties.

** Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement and Recreation Services (SIC 79).

Source: Based on ES202 data for the 1st Quarters of 1991, 1994, fromt he California Labor Market Information Divison, Employment Development Department.

- Which industries provide the most jobs in the METRO SACRAMENTO subregion?

**TABLE 5**
**Industries with the Largest Employment in the Metro Sacramento Subregion**

| Rank | SIC | Description | Employment 1994 |
|---|---|---|---|
| 1 | 581 | Eating & drinking places | 39,683 |
| 2 | 806 | Hospitals | 15,557 |
| 3 | 541 | Grocery stores | 14,556 |
| 4 | 531 | Department stores | 11,715 |
| 5 | 801 | Offices & clinics of doctors | 10,691 |
| 6 | 481 | Telephone communications | 9,353 |
| 7 | 736 | Personnel supply services | 8,387 |
| 8 | 738 | Misc. business services | 8,357 |
| 9 | 421 | Trucking & courier svcs, ex. air | 7,945 |
| 10 | 805 | Nursing & personal care facilities | 6,747 |
| 11 | 602 | Commercial banks | 6,216 |
| 12 | 551 | New & used car dealers | 5,603 |
| 13 | 874 | Management & public relations | 5,582 |
| 14 | 594 | Misc. shopping goods stores | 5,467 |
| 15 | 811 | Legal services | 5,399 |
| 16 | 799 | Misc. amusement & recreation svcs | 5,040 |
| 17 | 367 | Electronic components & access. | 4,729 |
| 18 | 641 | Insurance agents & brokers | 4,695 |
| 19 | 737 | Computer & data processing svcs | 4,536 |
| 20 | 633 | Fire, marine & casualty insurance | 4,449 |
| 21 | 802 | Offices & clinics of dentists | 4,384 |
| 22 | 653 | Real estate agents & managers | 4,375 |
| 23 | 152 | Residential building construction | 4,142 |
| 24 | 514 | Groceries & rel. products-whsle | 4,070 |
| 25 | 632 | Medical svc & health insurance | 4,054 |
| 26 | 881 | Private households | 3,988 |
| 27 | 872 | Accounting, auditing, bookkeep. | 3,956 |
| 28 | 701 | Hotels & motels | 3,935 |
| 29 | 871 | Engineering & architectural svcs | 3,544 |
| 30 | 734 | Services to buildings | 3,528 |
| | | Total employment in subregion | 424,465 |

Top 30 industries provide 52.9% of private sector jobs in the subregion.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Department

- Which industries gained the largest number of jobs in the METRO SACRAMENTO subregion during a recent period?

**TABLE 6**
**Industries Reporting the Largest Net Gains in Employment in the Metro Sacramento Subregion, 1991-94**

| Rank | SIC | Description | Net Change Employ. 1991-94 | Average Earnings 1994* | Average Establishment Size |
|---|---|---|---|---|---|
| 1 | 481 | Telephone communications | 2,166 | $45,002 | 108 |
| 2 | 616 | Mortgage bankers & brokers | 1,773 | $40,047 | 13 |
| 3 | 799 | Misc. amusement, recreation svc. | 1,662 | $12,597 | 19 |
| 4 | 736 | Personnel supply services | 1,615 | $15,877 | 56 |
| 5 | 874 | Management & public relations | 1,385 | $36,037 | 8 |
| 6 | 591 | Drug stores | 1,218 | $19,827 | 25 |
| 7 | 367 | Electronic components & access. | 993 | $70,223 | 169 |
| 8 | 801 | Offices & clinics of doctors | 974 | $47,135 | 12 |
| 9 | 581 | Eating & drinking places | 971 | $8,442 | 16 |
| 10 | 999 | Nonclassifiable establishments | 937 | $17,230 | 3 |
| 11 | 632 | Medical svc & health insurance | 857 | $34,066 | 119 |
| 12 | 206 | Sugar & confectionary products | 845 | $28,580 | 290 |
| 13 | 738 | Misc. business services | 838 | $13,774 | 13 |
| 14 | 734 | Services to buildings | 814 | $13,062 | 11 |
| 15 | 673 | Trusts | 786 | $12,035 | 51 |
| 16 | 836 | Residential care | 743 | $15,145 | 12 |
| 17 | 807 | Medical & dental laboratories | 690 | $26,171 | 24 |
| 18 | 283 | Drugs | 472 | na | na |
| 19 | 636 | Title insurance | 470 | $32,436 | 22 |

| | | | | | |
|---|---|---|---|---|---|
| 20 | 751 | Automotive rentals | 452 | $18,594 | 21 |
| 21 | 808 | Home health care services | 438 | $22,822 | 37 |
| 22 | 421 | Trucking & courier svcs, ex. air | 419 | $25,687 | 18 |
| 23 | 881 | Private households | 417 | $8,456 | 0 |
| 24 | 805 | Nursing & personal care facilities | 384 | $15,166 | 98 |
| 25 | 804 | Offices of other health practitioners | 371 | $23,320 | 4 |
| 26 | 512 | Drugs & sundries-whsle | 323 | $45,171 | 29 |
| 27 | 504 | Professnl & commercial eqp-whsle | 322 | $37,503 | 14 |
| 28 | 651 | Real estate operators & lessors | 314 | $12,502 | 7 |
| 29 | 835 | Child day care services | 311 | $10,857 | 7 |
| 30 | 806 | Hospitals | 308 | $29,898 | 598 |

* Quarterly payroll has been annualized based on data for the 1st Quarter (Jan-Mar) of 1994.
The reporting period may affect annual averages for economic activities subject to large seasonal fluctuations.

"na" indicates potentially confidential data which has bee suppressed.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Division, Employment Development Department.

- Which industries experienced the largest payroll increases in the METRO SACRAMENTO subregion during a recent period?

**TABLE 7**
**Industries Reporting the Largest Net Gains in Payroll in the Metro Sacramento Subregion, 1991-94**

| Rank | SIC | Description | Net Change in Total Payroll 1991-94 | Employment 1994 | Average Earnings 1994 |
|---|---|---|---|---|---|
| 1 | 367 | Electronic components & access. | $42,559,755 | 4,729 | $70,223 |
| 2 | 481 | Telephone communications | $21,398,167 | 9,353 | $45,002 |
| 3 | 616 | Mortgage bankers & brokers | $20,606,997 | 3,183 | $40,047 |
| 4 | 801 | Offices & clinics of doctors | $18,522,795 | 10,691 | $47,135 |
| 5 | 806 | Hospitals | $14,983,584 | 15,557 | $29,898 |

| | | | | | |
|---|---|---|---|---|---|
| 6 | 874 | Management & public relations | $13,448,769 | 5,582 | $36,037 |
| 7 | 736 | Personnel supply services | $10,288,264 | 8,387 | $15,877 |
| 8 | 541 | Grocery stores | $10,242,716 | 14,556 | $22,063 |
| 9 | 632 | Medical svc & health insurance | $9,869,552 | 4,054 | $34,066 |
| 10 | 602 | Commercial banks | $9,304,502 | 6,216 | $29,361 |
| 11 | 357 | Computer & office equipment | $8,758,108 | 3,232 | $48,272 |
| 12 | 581 | Eating & drinking places | $7,715,881 | 39,683 | $8,442 |
| 13 | 799 | Misc. amusement, recreation svcs | $7,308,832 | 5,040 | $12,597 |
| 14 | 591 | Drug stores | $6,389,792 | 3,122 | $19,827 |
| 15 | 206 | Sugar & confectionary products | $6,289,229 | 1,160 | $28,580 |
| 16 | 514 | Groceries & rel. products-whsle | $5,636,051 | 4,070 | $30,544 |
| 17 | 807 | Medical & dental laboratories | $5,455,249 | 2,213 | $26,171 |
| 18 | 636 | Title insurance | $5,430,333 | 1,515 | $32,436 |
| 19 | 802 | Offices & clinics of dentists | $4,946,578 | 4,384 | $25,288 |
| 20 | 512 | Drugs & sundries-whsle | $4,459,559 | 1,007 | $45,171 |
| 21 | 872 | Accounting, auditing, bookkeep. | $4,292,292 | 3,956 | $30,065 |
| 22 | 631 | Life insurance | $4,200,994 | 1,384 | $37,289 |
| 23 | 737 | Computer & data processing svcs | $4,157,505 | 4,536 | $39,607 |
| 24 | 551 | New & used car dealers | $4,116,602 | 5,603 | $34,739 |
| 25 | 738 | Misc. business services | $3,856,948 | 8,357 | $13,774 |
| 26 | 999 | Nonclassifiable establishments | $3,822,141 | 1,491 | $17,230 |
| 27 | 283 | Drugs | $3,766,983 | na | na |
| 28 | 573 | Radio, TV & computer stores | $3,647,903 | 3,186 | $22,730 |
| 29 | 504 | Professnl & commercial eqp-whsle | $3,277,023 | 3,337 | $37,503 |
| 30 | 836 | Residential care | $3,095,185 | 3,015 | $15,145 |

* Quarterly payroll has been annualized based on data for the 1st Quarter (Jan-Mar) of 1994. The reporting period may affect annual averages for economic activities subject to large seasonal fluctuations.

"na" indicates potentially confidential data which has been suppressed.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Divison, Employment Development Department.

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- What is the breakdown of employment by the major economic sectors in the RURAL VALLEY subregion?
- How does it compare to the economy of the state as a whole?

**TABLE 8**
**Employment by Sector for the Rural Sacramento Valley Subregion***

| Sector | Employ. 1991 | Employ. 1994 | Percent of Total 1994 | Net Change Employ. 1991-94 |
|---|---|---|---|---|
| Agriculture | 9,913 | 10,623 | 11.5% | 710 |
| Forestry/Fishing | 37 | 65 | 0.1% | 28 |
| Mining | 268 | 133 | 0.1% | (135) |
| Construction | 5,216 | 3,814 | 4.1% | (1,402) |
| Manufacturing | | | | |
| Durable | 6,223 | 5,940 | 6.4% | (283) |
| Nondurable | 5,033 | 5,269 | 5.7% | 236 |
| Transp, Utilities | 4,896 | 4,715 | 5.1% | (181) |
| Wholesale | 4,162 | 3,771 | 4.1% | (391) |
| Retaile Trade | 25,223 | 25,661 | 27.7% | 438 |
| Financial | 5,459 | 5,559 | 6.0% | 100 |
| Services | | | | |
| Personal | 2,615 | 2,802 | 3.0% | 187 |
| Business and Other | 10,361 | 10,438 | 11.3% | 77 |
| Tourism-related** | 2,111 | 2,038 | 2.2% | (73) |
| Health | 10,205 | 11,563 | 12.5% | 1,358 |
| Nonclassifiable | 82 | 268 | 0.3% | 186 |
| TOTAL | 91,804 | 92,659 | 100.0% | 855 |

* The Rural Valley subregion includes the Counties of Butte, Colusa, Glenn, Sutter, Tehama, and Yuba

** Tourism-related industries include Hotels and Motels (SIC 70) and Misc. Amusement and Recreational Services (SIC 79).

Source: Based on ES202 data for the 1st Quarters of 1991, 1994, fromt he California Labor Market Information Divison, Employment Development Department.

- Which industries provide the most jobs in the RURAL VALLEY subregion?

**TABLE 9**
**Industries with the Largest Employment in the Rural Sacramento Valley Subregion**

| Rank | SIC | Description | Employment 1994 |
|---|---|---|---|
| 1 | 581 | Eating & drinking places | 8,958 |
| 2 | 806 | Hospitals | 5,698 |
| 3 | 017 | Fruit and tree nuts | 4,503 |
| 4 | 541 | Grocery stores | 3,420 |
| 5 | 531 | Department stores | 3,103 |
| 6 | 801 | Offices & clinics of doctors | 1,863 |
| 7 | 805 | Nursing & personal care facilities | 1,858 |
| 8 | 203 | Preserved fruits & vegetables | 1,486 |
| 9 | 602 | Commercial banks | 1,401 |
| 10 | 243 | Millwork, plywood, struc members | 1,373 |
| 11 | 736 | Personnel supply services | 1,338 |
| 12 | 072 | Crop services | 1,235 |
| 13 | 421 | Trucking & courier svcs, ex. air | 1,221 |
| 14 | 551 | New & used car dealers | 1,140 |
| 15 | 881 | Private households | 1,059 |
| 16 | 011 | Cash grains | 1,029 |
| 17 | 836 | Residential care | 1,012 |
| 18 | 076 | Farm labor & management svcs | 1,009 |
| 19 | 019 | General farms, primarily crop | 1,007 |
| 20 | 508 | Machinery, eqpt, supplies-whlse | 978 |
| 21 | 152 | Residential building construction | 964 |
| 22 | 799 | Misc. amusement, recreation svcs | 963 |
| 23 | 493 | Combination utility services | 939 |
| 24 | 554 | Gasoline service stations | 935 |
| 25 | 653 | Real estate agents & managers | 931 |
| 26 | 832 | Individual & family social svcs | 920 |

| | | | |
|---|---|---|---|
| 27 | 591 | Drug stores | 912 |
| 28 | 594 | Misc. shopping goods stores | 887 |
| 29 | 802 | Offices & clinics of dentists | 879 |
| 30 | 521 | Lumber & bldg materials-retail | 864 |
| | | Total employment in subregion | 92,659 |

Top 30 industries provide 58.2% of private sector jobs in the subregion.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Department

- Which industries gained the largest number of jobs in the RURAL VALLEY subregion during a recent period?

**TABLE 10**
**Industries Reporting the Largest Net Gains in Employment in the Rural Sacramento Valley Subregion, 1991-94**

| Rank | SIC | Description | Net Change Employ. 1991-94 | Average Earnings 1994* | Average Establishment Size |
|---|---|---|---|---|---|
| 1 | 531 | Department stores | 944 | $11,888 | 111 |
| 2 | 806 | Hospitals | 555 | $25,371 | 335 |
| 3 | 805 | Nursing & personal care facilities | 532 | $14,231 | 88 |
| 4 | 864 | Civic & social organizations | 514 | $7,582 | 15 |
| 5 | 265 | Paperboard containers & boxes | 469 | na | na |
| 6 | 017 | Fruit & tree nuts | 409 | $12,429 | 4 |
| 7 | 076 | Farm labor & management svcs | 336 | $10,929 | 18 |
| 8 | 495 | Sanitary services | 228 | $19,523 | 18 |
| 9 | 581 | Eating & drinking places | 221 | $7,180 | 15 |
| 10 | 382 | Measuring & controlling devices | 196 | na | na |
| 11 | 999 | Nonclassifiable establishments | 186 | $16,012 | 3 |
| 12 | 243 | Millwork, plywood & struc members | 178 | $23,100 | 34 |
| 13 | 072 | Crop services | 174 | $16,760 | 9 |
| 14 | 371 | Motor vehicles & equipment | 156 | na | na |

| | | | | | |
|---|---|---|---|---|---|
| 15 | 591 | Drug stores | 155 | $20,248 | 18 |
| 16 | 653 | Real estate agents & managers | 138 | $13,853 | 5 |
| 17 | 515 | Farm product-raw materials-whlse | 135 | $32,454 | 20 |
| 18 | 722 | Photographic studios, portrait | 130 | $14,335 | 18 |
| 19 | 836 | Residential care | 124 | $12,246 | 10 |
| 20 | 011 | Cash grains | 119 | na | na |
| 21 | 833 | Job training & rel. services | 118 | $15,519 | 15 |
| 22 | 808 | Home health care services | 115 | $20,634 | 54 |
| 23 | 835 | Child day care services | 113 | $7,850 | 5 |
| 24 | 673 | Trusts | 110 | na | na |
| 25 | 807 | Medical & dental laboratories | 103 | $23,489 | 6 |
| 26 | 783 | Motion picture theaters | 99 | $5,464 | 18 |
| 27 | 384 | Medical instruments & supplies | 98 | $24,948 | 25 |
| 28 | 519 | Misc. durable goods-whlse | 95 | $25,155 | 8 |
| 29 | 572 | Household appliance stores | 91 | $14,723 | 12 |
| 30 | 016 | Vegetables & melons | 87 | $21,078 | 5 |

* Quarterly payroll has been annualized based on data for the 1st Quarter (Jan-Mar) of 1994. The reporting period may affect annual averages for economic activities subject to large seasonal fluctuations.

"na" indicates potentially confidential data which has bee suppressed.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Divison, Employment Development Department.

- Which industries experienced the largest payroll increases in the RURAL VALLEY subregion during a recent period?

**TABLE 11**
**Industries Reporting the Largest Net Gains in Payroll in the Rural Valley Subregion, 1991-94**

| Rank | SIC | Description | Net Change in Total Payroll 1991-94 | Employment 1994 | Average Earnings 1994 |
|---|---|---|---|---|---|
| 1 | 806 | Hospitals | $7,131,277 | 5,698 | $25,371 |
| 2 | 017 | Fruits & tree nuts | $3,349,293 | 4,503 | $12,429 |
| 3 | 531 | Department stores | $3,343,185 | 3,103 | $11,888 |

| | | | | | |
|---|---|---|---|---|---|
| 4 | 805 | Nursing & personal care facilities | $2,559,094 | 1,858 | $14,231 |
| 5 | 265 | Paperboard containers & boxes | $2,179,639 | na | na |
| 6 | 602 | Commercial banks | $1,994,942 | 1,401 | $23,530 |
| 7 | 382 | Measuring & controlling devices | $1,914,160 | na | na |
| 8 | 243 | Millwork, plywood & struc members | $1,595,103 | 1,363 | $23,100 |
| 9 | 371 | Motor vehicles & equipment | $1,498,016 | na | na |
| 10 | 072 | Crop services | $1,456,236 | 1,235 | $16,760 |
| 11 | 076 | Farm labor & management svcs | $1,427,590 | 1,009 | $10,929 |
| 12 | 515 | Farm-product raw materials-whsle | $1,385,761 | 204 | $32,454 |
| 13 | 801 | Offices & clinics of doctors | $1,342,801 | 1,863 | $35,211 |
| 14 | 591 | Drug stores | $1,216,062 | 912 | $20,248 |
| 15 | 495 | Sanitary services | $1,171,704 | 347 | $19,523 |
| 16 | 864 | Civic & social associations | $953,987 | 692 | $7,582 |
| 17 | 808 | Home health care services | $890,599 | 323 | $20,634 |
| 18 | 999 | Nonclassifiable establishments | $879,513 | 268 | $16,012 |
| 19 | 802 | Offices & clinics of dentists | $867,693 | 879 | $21,275 |
| 20 | 551 | New & used car dealers | $856,993 | 1,140 | $26,223 |
| 21 | 836 | Residential care | $786,140 | 1,012 | $12,246 |
| 22 | 616 | Mortgage bankers & brokers | $781,919 | 99 | $45,948 |
| 23 | 384 | Medical instruments & supplies | $711,480 | 174 | $24,948 |
| 24 | 653 | Real estate agents & managers | $703,652 | 931 | $13,853 |
| 25 | 521 | Lumber & bldg material stores | $655,633 | 864 | $20,329 |
| 26 | 807 | Medical & dental laboratories | $649,064 | 152 | $23,489 |
| 27 | 871 | Engineering & architectural svcs | $645,234 | 326 | $36,533 |

| | | | | | |
|---|---|---|---|---|---|
| 28 | 519 | Misc. nondurable goods-whsle | $621,929 | 556 | $25,155 |
| 29 | 526 | Retail nurseries & garden stores | $618,769 | 221 | $28,535 |
| 30 | 581 | Eating & drinking places | $593,711 | 8,958 | $7,180 |

* Quarterly payroll has been annualized based on data for the 1st Quarter (Jan-Mar) of 1994. The reporting period may may affect annual averages for economic activities subject to large seasonal fluctuations.

"na" indicates potentially confidential data which has bee suppressed.

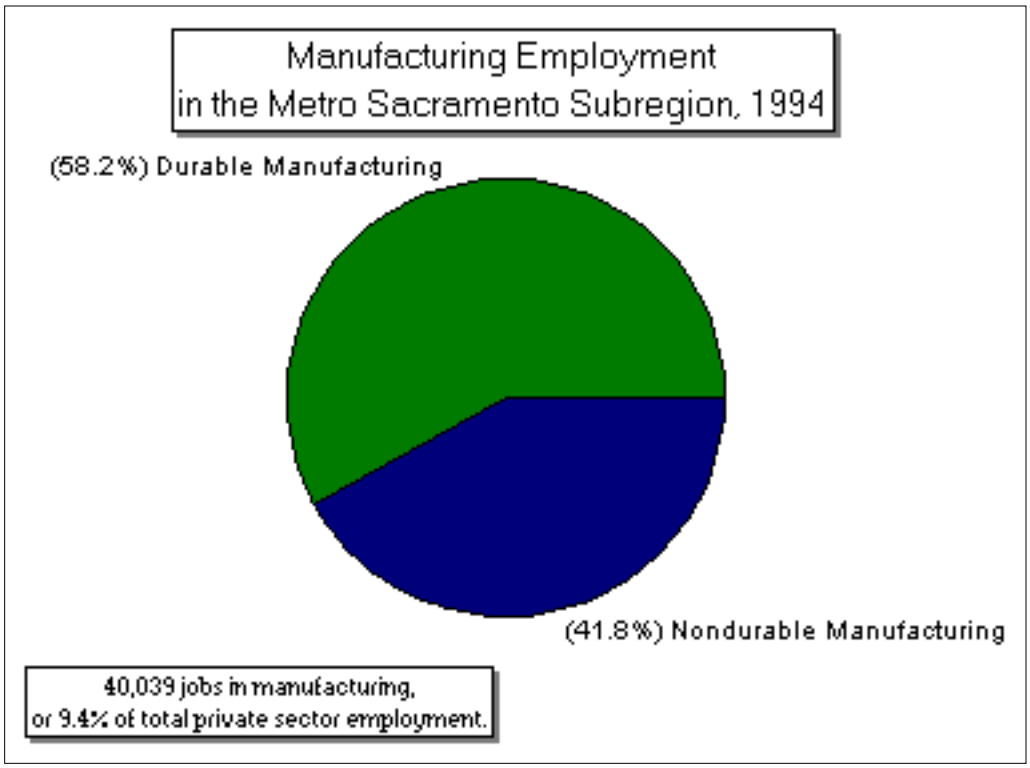
Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Division, Employment Development Department.

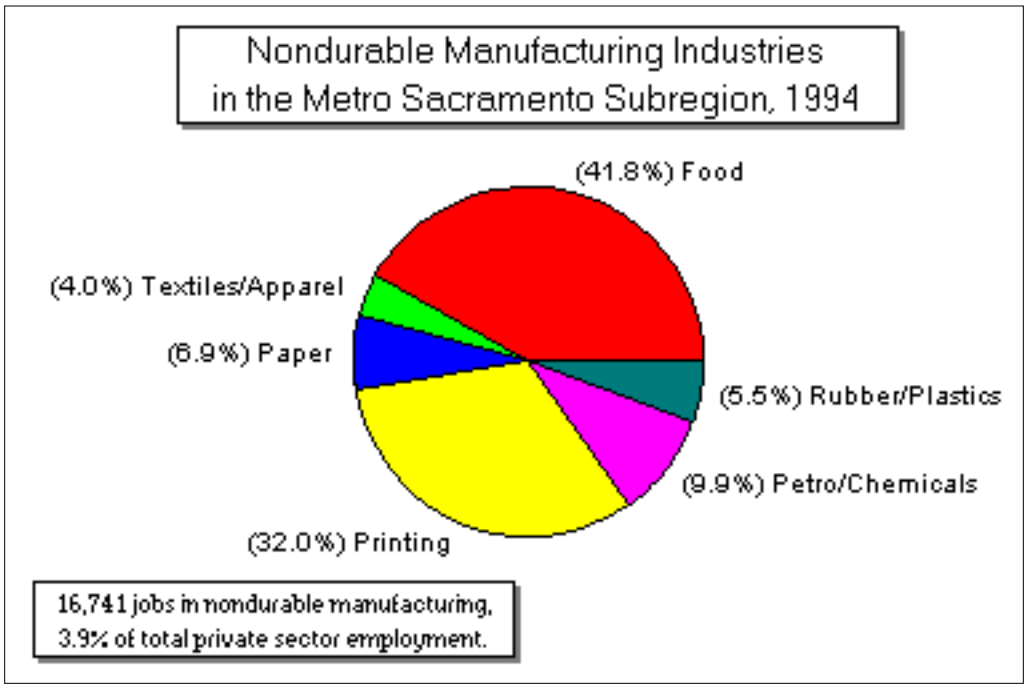
- What types of manufacturing industries are present in the Sacramento Region and how large are they?

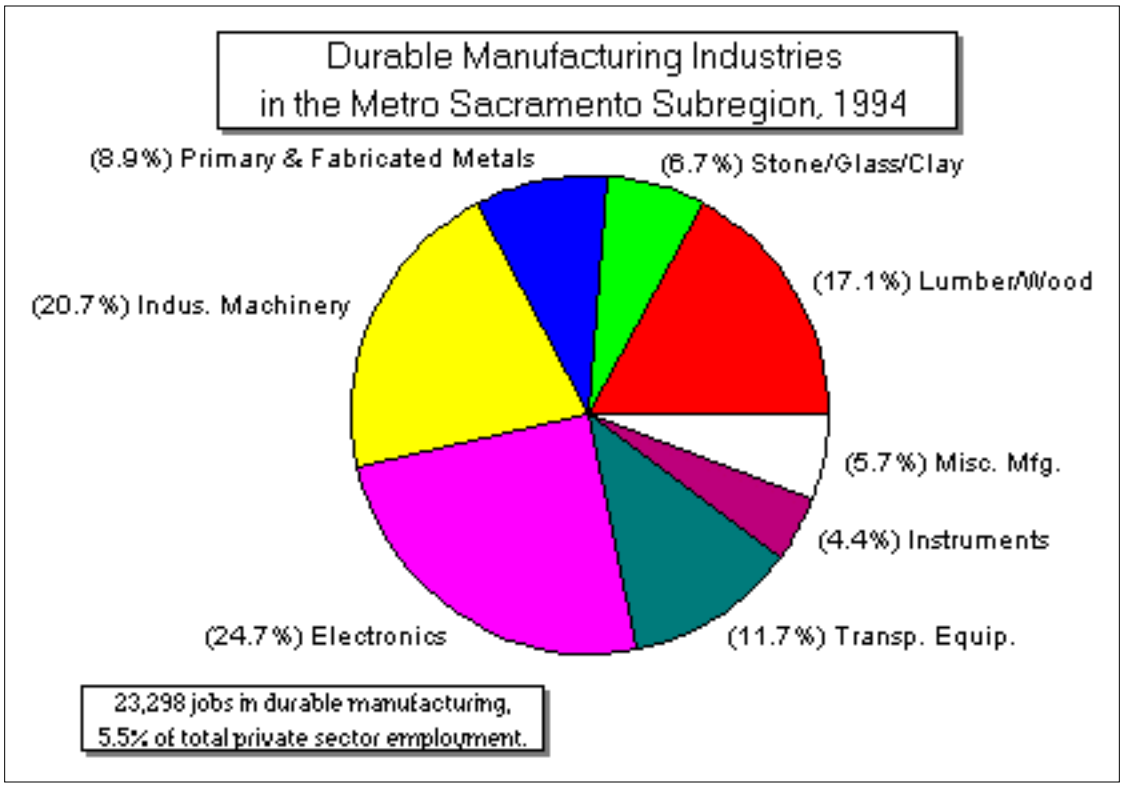
**Table 12**
**Distribution of Employment in Manufacturing Industries by Subregion, 1994**

| | Metro | | Rural Valley | |
|---|---|---|---|---|
| **Industry** | **Employ.** | **Percent** | **Employ.** | **Percent** |
| Lumber/Wood | 3,993 | 10.0% | 2,562 | 22.9% |
| Stone/Glass/Clay | 1,567 | 3.9% | 635 | 5.7% |
| Primary & Fabricated Metals | 2,084 | 5.2% | 379 | 3.4% |
| Indus. Machinery | 4,820 | 12.0% | 781 | 7.0% |
| Electronics | 5,751 | 14.4% | na | na |
| Transp. Equip. | 2,719 | 6.8% | 547 | 4.9% |
| Instruments | 1,033 | 2.6% | 403 | 3.6% |
| Misc. Mfg. | 1,331 | 3.3% | na | na |
| **Durable Goods** | **23,298** | **58.2%** | **5,940** | **53.0%** |
| Food | 6,990 | 17.5% | 2,744 | 24.5% |
| Textiles/Apparel/Leather | 671 | 1.7% | 416 | 3.7% |
| Paper | 1,148 | 2.9% | 924 | 8.2% |
| Printing | 5,360 | 13.4% | 987 | 8.8% |
| Petro/Chemicals | 1,649 | 4.1% | 63 | 0.6% |
| Rubber/Plastics | 923 | 2.3% | 135 | 1.2% |
| **Nondurable Goods** | **16,741** | **41.8%** | **5,269** | **47.0%** |
| **Total Manufacturing** | **40,039** | **100.0%** | **11,209** | **100.0%** |
| Manufacturing as % of Total Jobs | 9.4% | | 12.1% | |

Source: ES202 data for 1st Quarter 1994 from the California Labor Market Information Division, Employment Development Department


Manufacturing Employment
in the Metro Sacramento Subregion, 1994
(58.2%) Durable Manufacturing
(41.8%) Nondurable Manufacturing
40,039 jobs in manufacturing,
or 9.4% of total private sector employment.


Nondurable Manufacturing Industries
in the Metro Sacramento Subregion, 1994
(41.8%) Food
(4.0%) Textiles/Apparel
(6.9%) Paper
(5.5%) Rubber/Plastics
(9.9%) Petro/Chemicals
(32.0%) Printing
16,741 jobs in nondurable manufacturing,
3.9% of total private sector employment.


Durable Manufacturing Industries
in the Metro Sacramento Subregion, 1994
(8.9%) Primary & Fabricated Metals
(6.7%) Stone/Glass/Clay
(17.1%) Lumber/Wood
(20.7%) Indus. Machinery
(5.7%) Misc. Mfg.
(4.4%) Instruments
(24.7%) Electronics
(11.7%) Transp. Equip.
23,298 jobs in durable manufacturing,
5.5% of total private sector employment.

- Where are the jobs in agricultural production and food processing located?
- Did these jobs grow or decline in the 1991-94 period?

**TABLE 13**
**Employment Change in the Agricultural Production and Food Processing Sectors, 1991-94**

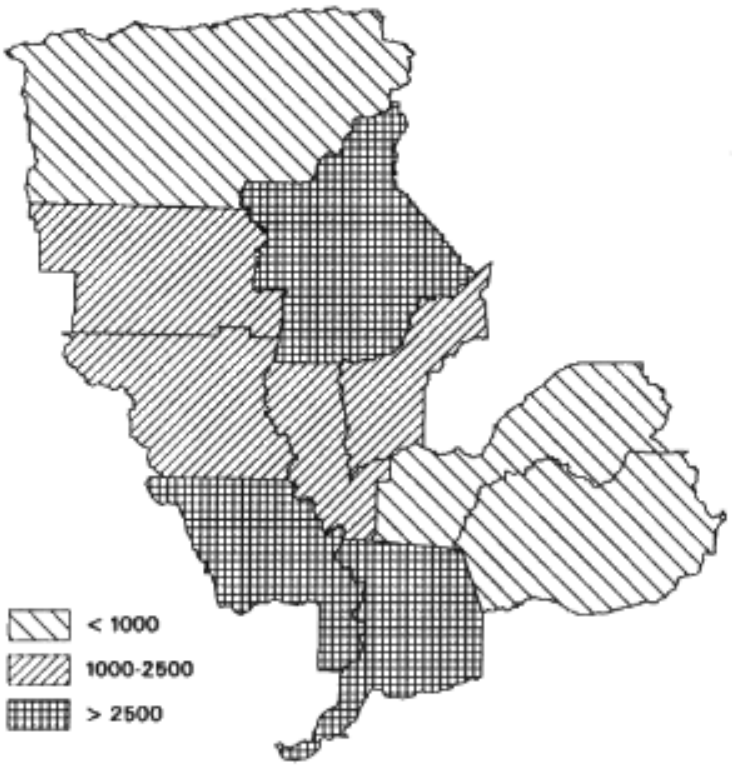
| | Agricultural Production Jobs | | | | Food Processing Jobs | | | |
|---|---|---|---|---|---|---|---|---|
| | 1991 | 1994 | Net Chg. | Average Earnings, '94 | 1991 | 1994 | Net Chg. | Average Earnings, '94 |
| El Dorado (w) | 325 | 359 | 34 | $11,750 | 41 | 62 | 21 | $11,911 |
| Placer (w) | 821 | 741 | (80) | $14,295 | 33 | 11 | (22) | $23,884 |
| Sacramento | 4,939 | 4,952 | 13 | $13,718 | 4,703 | 5,224 | 521 | $31,312 |
| Yolo | 3,116 | 2,677 | (439) | $18,533 | 1,884 | 1,693 | (191) | $29,904 |
| **Metro** | **9,201** | **8,729** | **(472)** | **$15,163** | **6,661** | **6,990** | **329** | **$30,787** |
| Butte | 2,789 | 2,775 | (14) | $14,268 | 866 | 872 | 6 | $22,214 |
| Colusa | 1,256 | 1,330 | 74 | $15,133 | 325 | 415 | 90 | $27,608 |
| Glenn | 1,284 | 1,434 | 150 | $13,419 | 716 | 574 | (142) | $19,675 |
| Sutter | 1,150 | 2,299 | 1,149 | $13,927 | 618 | 409 | (209) | $28,893 |
| Tehama | 794 | 890 | 96 | $15,390 | 473 | 611 | 138 | $20,987 |
| Yuba | 1,406 | 1,716 | 310 | $11,615 | 33 | 42 | 9 | $15,211 |
| **Valley** | **8,679** | **10,444** | **1,765** | **$13,846** | **3,031** | **2,923** | **(108)** | **$23,059** |
| **REGION** | **17,880** | **19,173** | **1,293** | **$14,446** | **9,692** | **9,913** | **221** | **$28,508** |

Source: ES202 data for 1st Quarters 1991, 1994 from the California Labor Market Information Divison, Employment Development Department

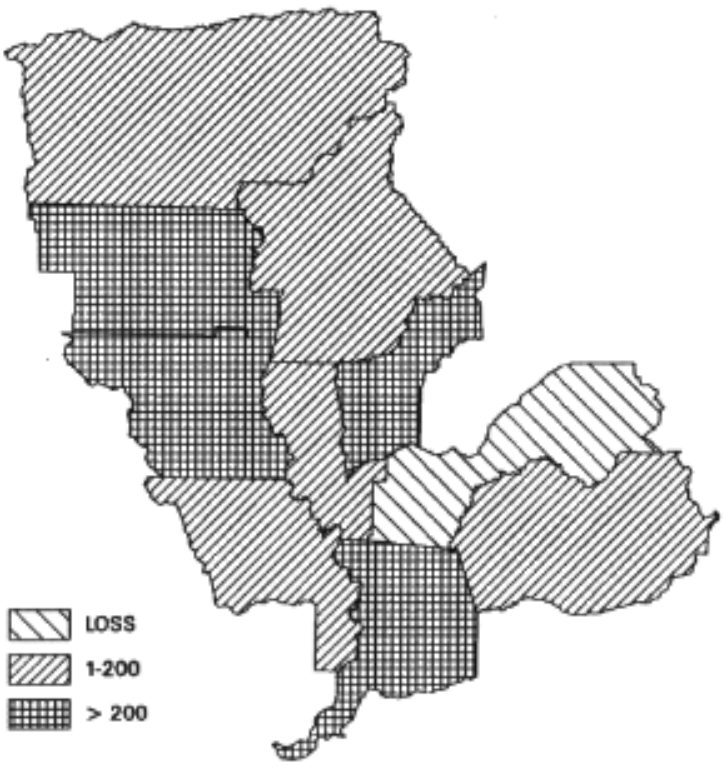
# SACRAMENTO VALLEY REGION

## AGRICULTURE CLUSTER - BY COUNTY

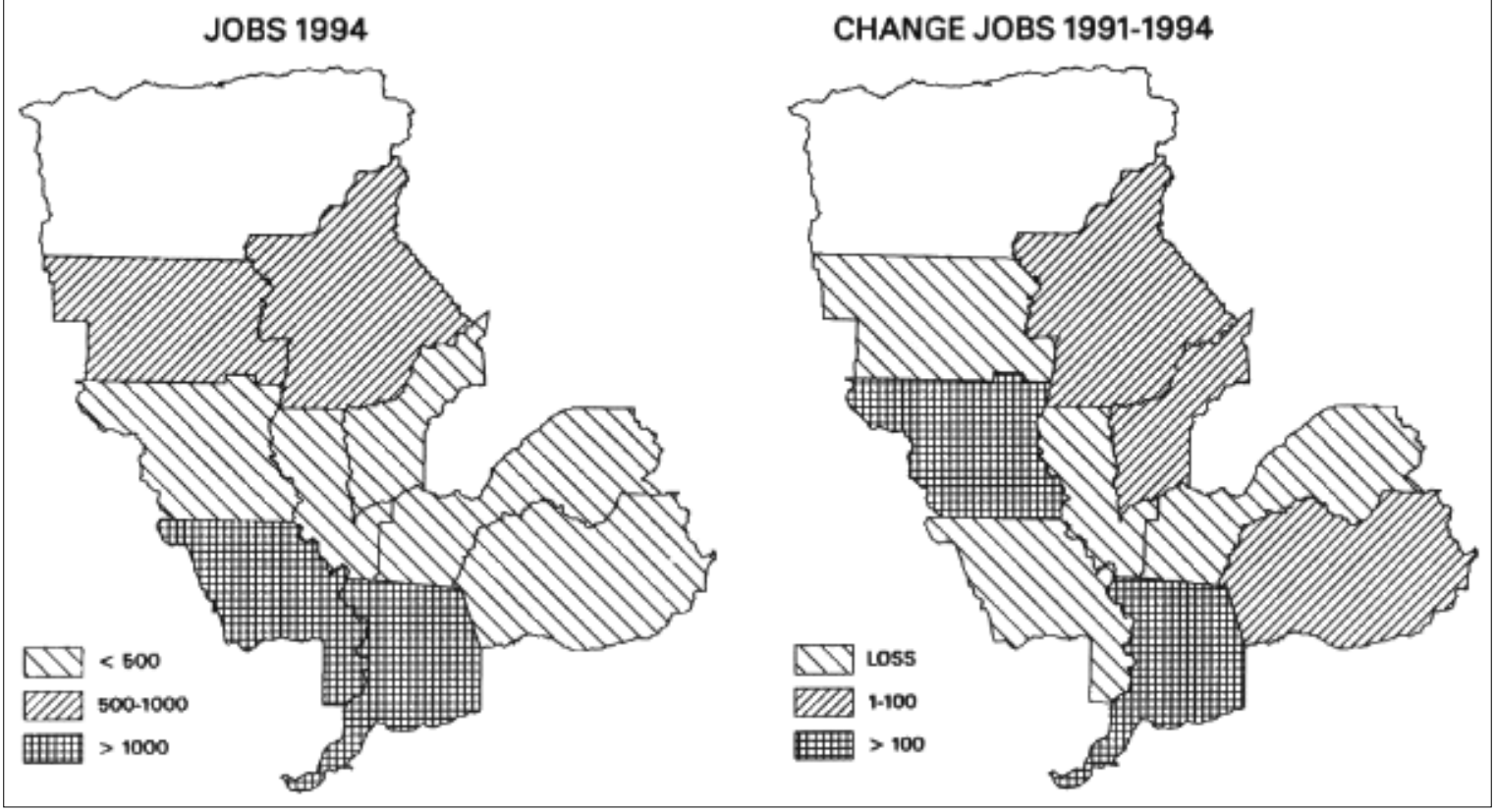
### JOBS 1994

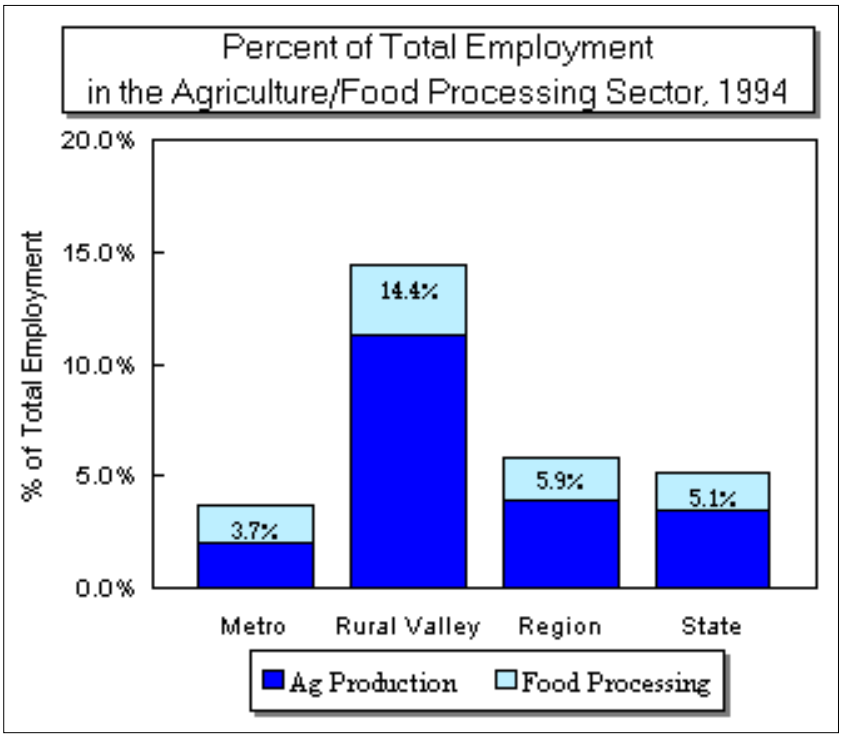


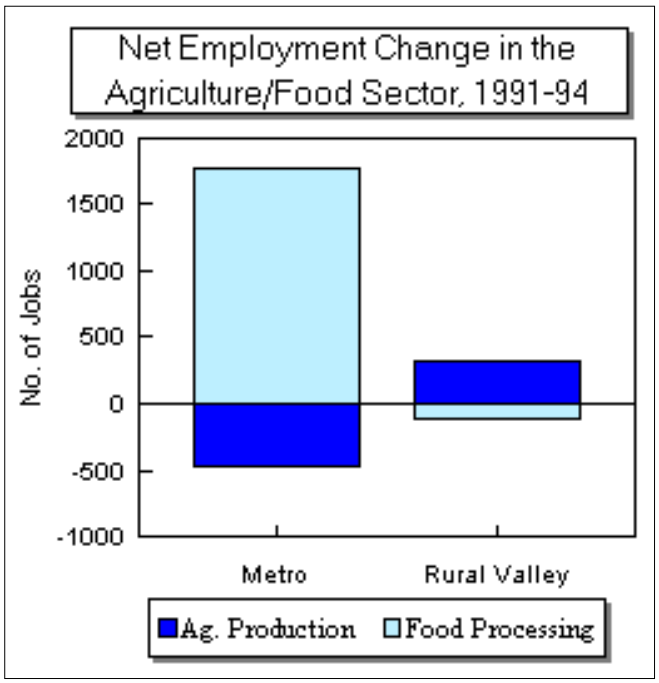

### CHANGE JOBS 1991-1994

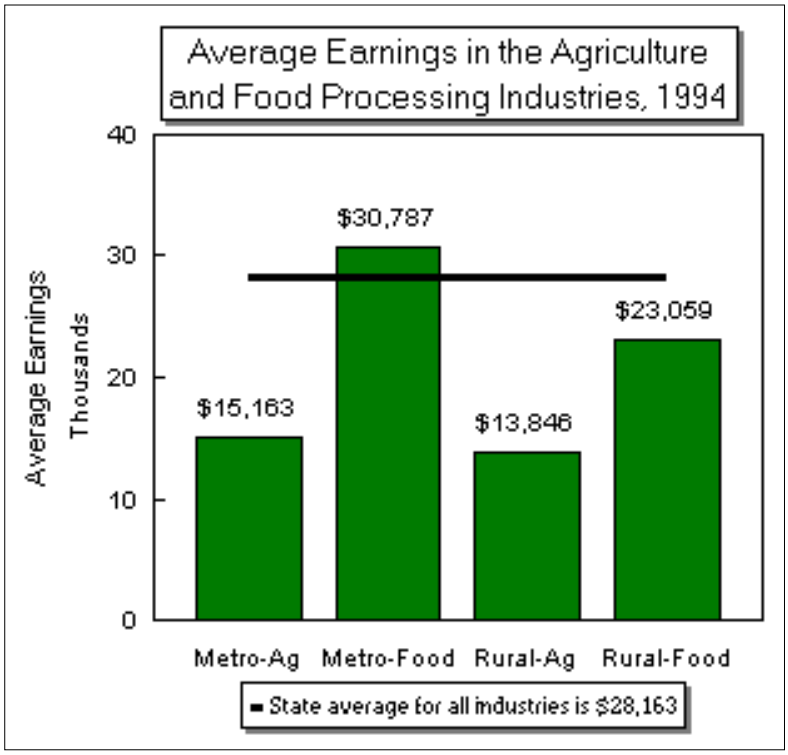


## SACRAMENTO VALLEY REGION
## FOOD PROCESSING CLUSTER - BY COUNTY




Net Employment Change in the Agriculture/Food Sector, 1991-94
2000
1500
1000
500
0
-500
-1000
No. of Jobs
Metro
Rural Valley
Ag. Production
Food Processing


Average Earnings in the Agriculture and Food Processing Industries, 1994
40
30
20
10
0
Average Earnings
Thousands
$30,787
$23,059
$15,163
$13,846
Metro-Ag
Metro-Food
Rural-Ag
Rural-Food
State average for all industries is $28,163

| Previous Page | The New Economy Addendum II | Next Page |
|---|---|---|

- Where are the jobs in the electronics industries?*
- Did these jobs grow or decline in the period 1991-94?

**TABLE 14**
**Employment Change in the Electronics Industries*, 1991-94**

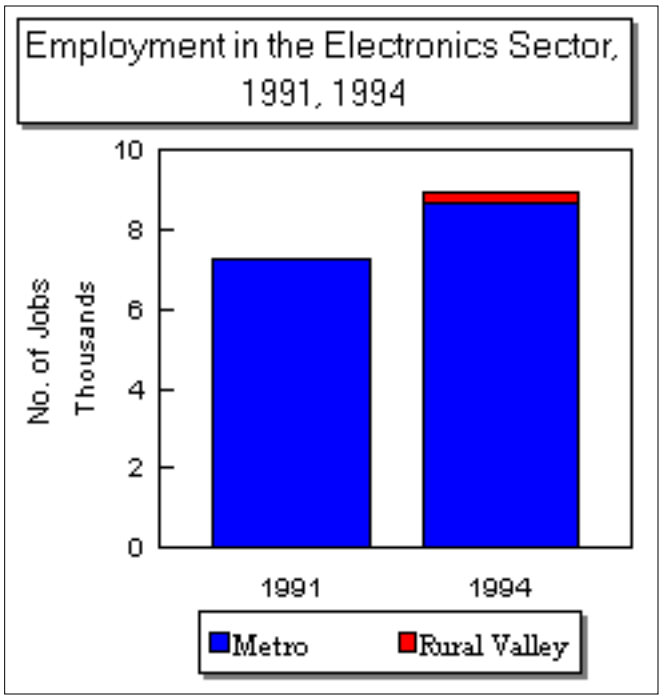
| Area | 1991 | 1994 | Net Change Employment 1991-94 |
|---|---|---|---|
| El Dorado (w) | 23 | 32 | 9 |
| Placer (w) | 3,795 | 4,204 | 409 |
| Sacramento | 3,388 | 4,400 | 1,012 |
| Yolo | 41 | 50 | 9 |
| **Metro** | **7,247** | **8,686** | **1,439** |
| Butte | 30 | 251 | 221 |
| Colusa | 0 | 0 | 0 |
| Glenn | 0 | na | na |
| Sutter | 0 | 0 | 0 |
| Tehama | na | na | na |
| Yuba | 0 | 0 | 0 |
| **Rural Valley**** | **30** | **251** | **221** |
| **REGION**** | **7,277** | **8,937** | **1,660** |

"na" indicates potentially confidential data which has been suppressed.

* Includes Computers and Office Equipment (SIC 357), Electronic Component & Access (SIC 367), Instruments (SIC 382)

**Excludes employment for Glenn and Tehama Counties.

Source: Based on ES202 data for the 1st Quarter of 1994 from the California Labor Market Information Division, Employment Development Dept


Employment in the Electronics Sector, 1991, 1994
No. of Jobs Thousands
10
8
6
4
2
0
1991
1994
Metro
Rural Valley

| Previous Page | The New Economy Addendum II | Next Page |
|---|---|---|

- Where are the jobs in the health-related manufacturing and services industries?
- Did these jobs grow or decline in the period, 1991-94?

**TABLE 15**
**Employment Change in the Health-related Sectors, 1991-94**

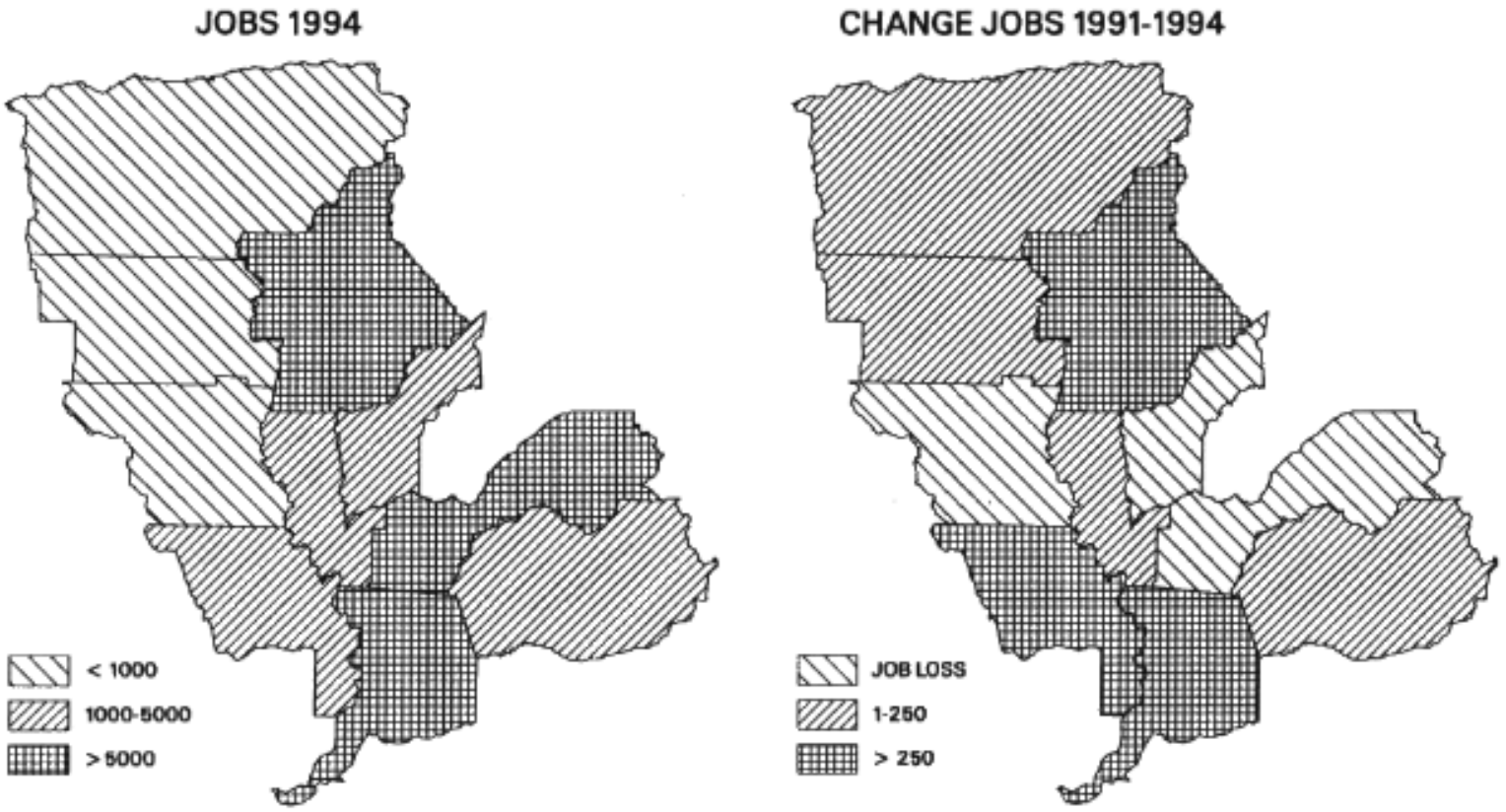
| | Health Manufacturing Jobs | | | | Health Services Jobs | | | |
|---|---|---|---|---|---|---|---|---|
| **Area** | **1991** | **1994** | **Net Change 1991-94** | **Average Earnings, '94** | **1991** | **1994** | **Net Change 1991-94** | **Average Earnings '94** |
| Metro | 968 | 1,071 | 103 | $30,569 | 41,362 | 45,078 | 3,716 | $30,464 |
| Rural Valley | 76 | 174 | 98 | $24,948 | 10,205 | 11,563 | 1,358 | $24,284 |
| Region | 1,044 | 1,245 | 201 | $29,784 | 51,567 | 56,641 | 5,074 | $29,202 |

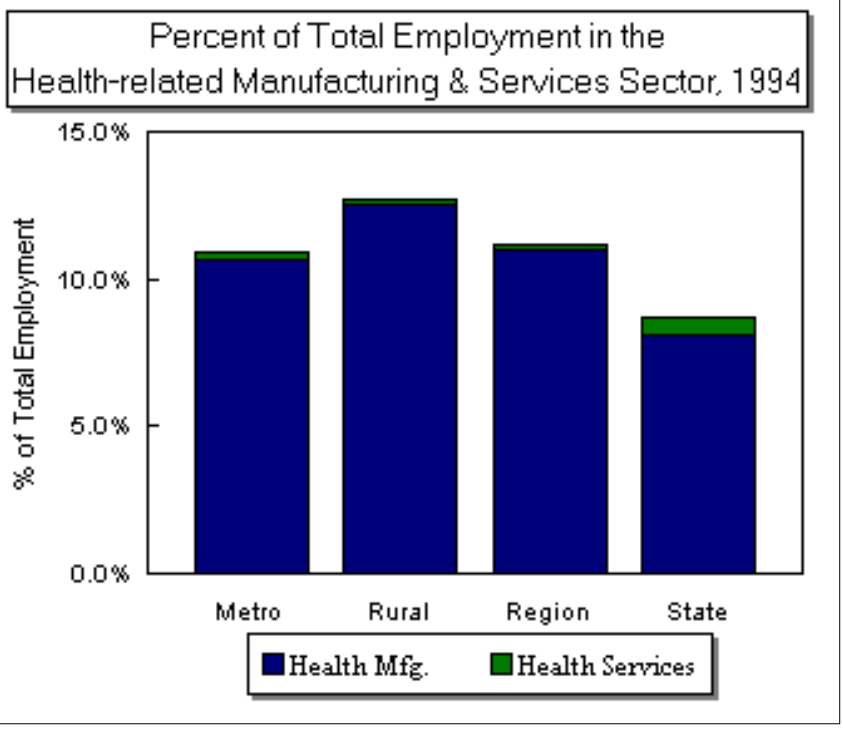
| | All Health-related Jobs | | | |
|---|---|---|---|---|
| **Area** | **1991** | **1994** | **Net Change 1991-94** | **Average Earnings, '94** |
| El Dorado (w) | 1,424 | 1,672 | 248 | $25,080 |
| Placer (w) | 5,208 | 5,407 | 199 | $26,656 |
| Sacramento | 31,919 | 34,865 | 2,946 | $31,539 |
| Yolo | 3,531 | 4,205 | 674 | $28,610 |
| **Metro** | 42,330 | 46,149 | 3,819 | $30,466 |
| Butte | 6,568 | 8,044 | 1,476 | $23,225 |
| Colusa | 266 | 246 | (20) | $18,442 |
| Glenn | 134 | 125 | (9) | $13,565 |
| Sutter | 1,239 | 1,285 | 46 | $29,787 |
| Tehama | 837 | 864 | 27 | $23,289 |
| Yuba | 1,237 | 1,173 | (64) | $28,717 |
| **Rural** | 10,281 | 11,737 | 1,456 | $24,294 |
| **REGION** | 52,611 | 57,886 | 5,275 | $29,215 |

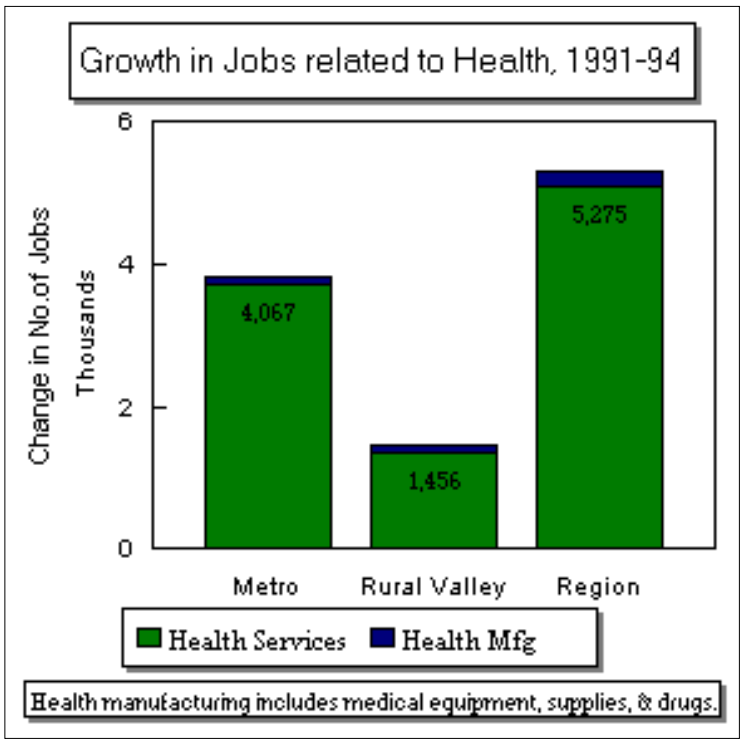
Note: Health manufacturing includes Medical and Dental Equipment & Supplies (SIC 384) and Drugs (SIC 384). Health Services include all activities categorized under SIC 80.

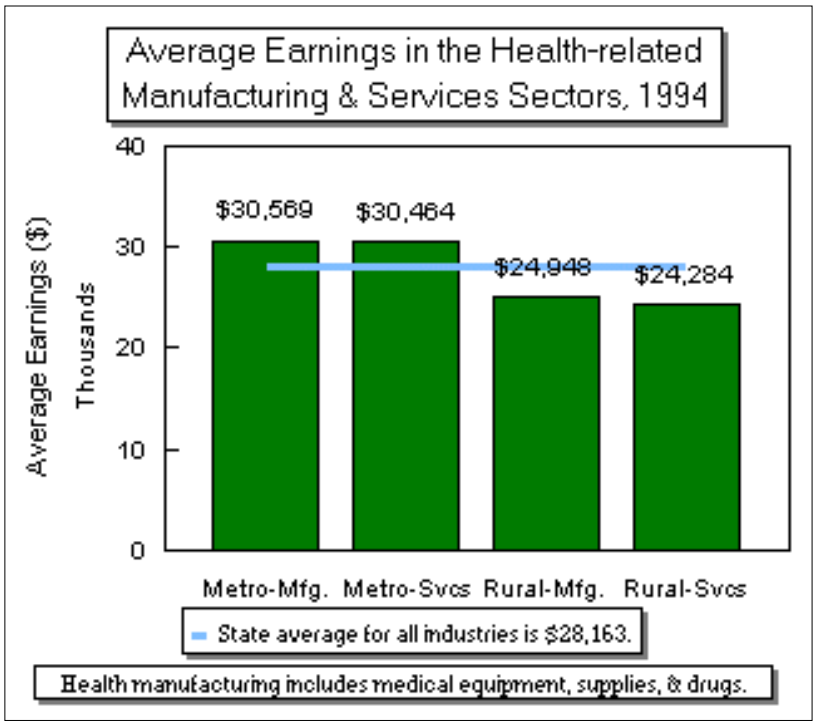
## SACRAMENTO VALLEY REGION

## HEALTH SERVICES CLUSTER - BY COUNTY




Growth in Jobs related to Health, 1991-94
Change in No.of Jobs
Thousands
6
4
2
0
4,067
1,456
5,275
Metro
Rural Valley
Region
Health Services
Health Mfg
Health manufacturing includes medical equipment, supplies, & drugs.


Average Earnings in the Health-related Manufacturing & Services Sectors, 1994
Average Earnings ($)
Thousands
40
30
20
10
0
$30,569
$30,464
$24,948
$24,284
Metro-Mfg.
Metro-Svcs
Rural-Mfg.
Rural-Svcs
State average for all industries is $28,163.
Health manufacturing includes medical equipment, supplies, & drugs.

# The Manufacturing Cluster in the Sacramento Valley

California Economic Strategy Panel
Sacramento Valley Regional Forum

## About this Paper

This paper was produced by Collaborative Economics, Inc. on behalf of the California Economic Strategy Panel. The California Economic Strategy Panel, a distinguished group of public and private sector leaders appointed by the Legislature and the Governor, has launched an economic strategy process to identify the opportunities and needs facing industry clusters in the various California regions. The term "industry cluster" refers to a geographic concentration companies, talent, and support institutions that drive wealth creation in a region.

This paper is background material for the Regional Forum that the Panel is holding in Sacramento on December 15, 1995. Executives from the Manufacturing cluster will discuss with the Panel the opportunities to develop further the cluster in Sacramento Valley as well as barriers to that growth. This paper will then be revised and submitted to the Panel for inclusion in their California strategy document due in December, 1995.

## Contents



## Executive Summary

The manufacturing cluster has enjoyed tremendous growth in recent years in the

Sacramento region, which is defined as Butte, Colusa, El Dorado, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo, and Yuba Counties for the California Economic Strategy Panel process. Three industry sectors in particular have contributed to this growth and were studied as representative of the overall manufacturing cluster: (1) food processing, (2) electronic components and (3) medical equipment manufacturing.

# Components of the Manufacturing Cluster

## FOOD PROCESSING

The food processing sector is comprised of the following: ice cream and frozen desserts; fluid milk; canned specialties; canned fruits and vegetables; dehydrated fruits, vegetables, and soups; pickles, sauces, and salad dressings; cereal breakfast foods; rice milling; bread, cake, and related products; cookies and crackers; beet sugar; salted and roasted nuts and seeds; animal and marine fats and oils; wines, brandy, and brandy spirits; bottled and canned soft drinks; and food preparations.

## ELECTRONIC COMPONENTS

The electronic components manufacturing sector is comprised of the following: computer terminals; switchgear and switchboard apparatus; vehicular lighting equipment; printed circuit boards; semiconductors and related devices; engine electrical equipment; electrical equipment and supplies; and space propulsion units and parts.

## MEDICAL EQUIPMENT

The medical equipment manufacturing sector is comprised of the following: surgical and medical instruments; surgical appliances and supplies; and electromedical equipment.

While these are distinctly different industries, they share the following major components that have made this cluster grow in this region.

- The process-related components are:
- Research and Development
- Manufacturing and Assembly
- The local infrastructure components are:
- Local Universities and Colleges
- Suppliers
- Talent
- Technology
- Physical Infrastructure

# Cluster Size and Growth

- Manufacturing is a major employment contributor to the local economy with more than 20,000 jobs in these three sectors alone.
- The relative concentration of employment in food processing and electronic components manufacturing in the Sacramento region is more than double the rest of the nation.
- A significant factor to note is that this data does not include the employment of companies who have recently moved to the area, such as Packard Bell with 3,800 employees.

# Evolution

- Prior to Hewlett-Packard's arrival in the region, the economy was focused primarily on government and agriculture. Since Hewlett-Packard's decision to locate in Roseville in 1979, there has been a substantial increase in the number of manufacturing companies which have chosen to locate in the Sacramento region.
- Most of these companies have relocated or, more commonly, expanded operations from the San Francisco Bay Area or Southern California.
- These relocation decisions, while due to many factors, have been primarily focused on the quality of life and abundant labor pool of the region.

# Cluster Relationships

- Food processing, electronic components and biomedical instrument manufacturing produce distinctly different products, yet there are many common relationships within the cluster.
- This relationship has recently resulted in industries drawing upon a common labor pool for positions such as assemblers, technicians, and other skilled workers. The machinery they work on may be different, but require the same functional skill set.
- Many manufacturers in the region also use temporary workers to fulfill the changing employment needs that vary with changing product demands and production requirements. The opportunity exists to form a common temporary worker pool, which manufacturers could collaborate on to provide basic skills training.
- The relationship between the manufacturers and the local colleges and universities is strong both in terms of workforce development and research and development.

# Opportunities Driving Manufacturing Cluster

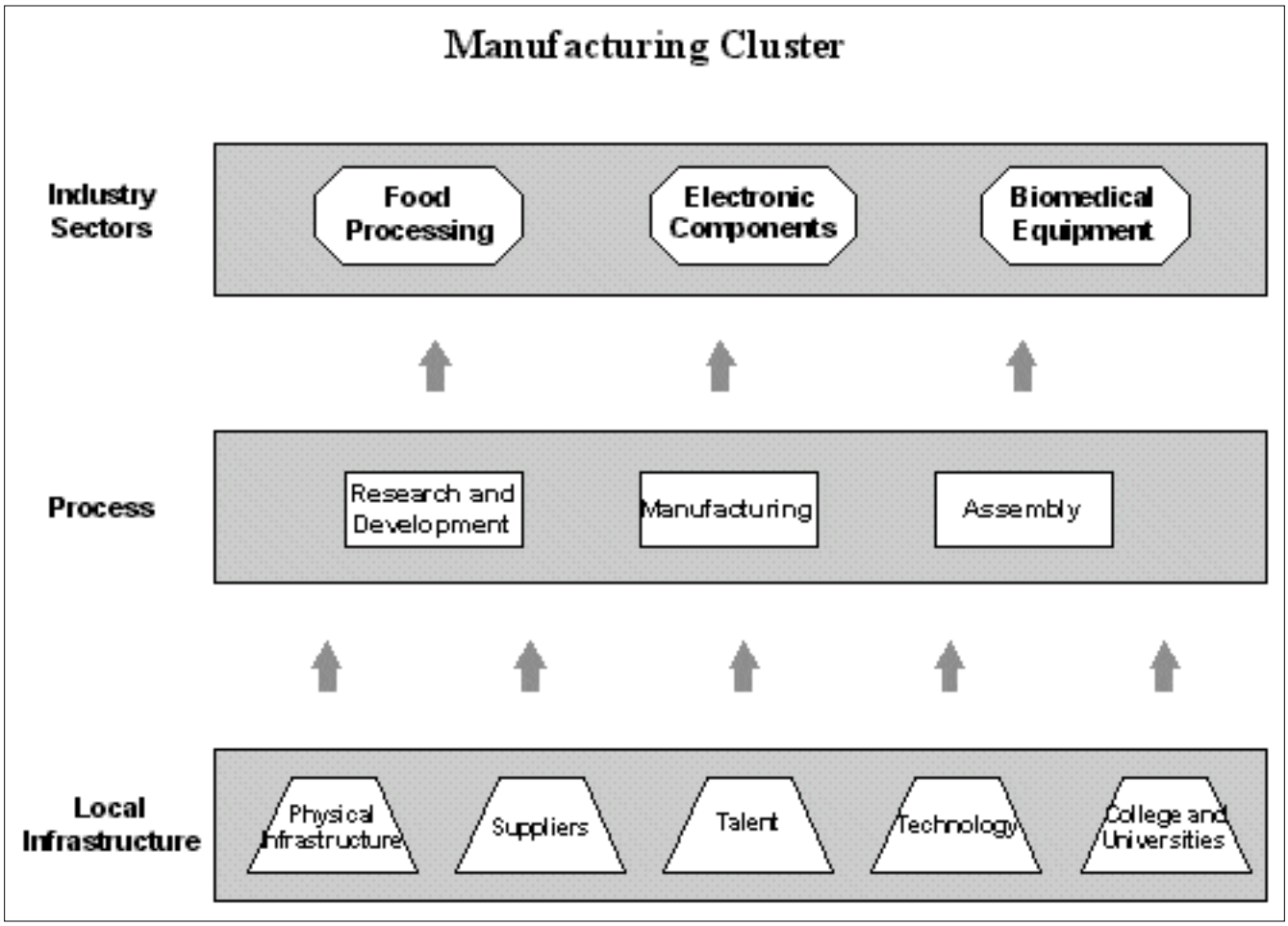
- Change and growth in the manufacturing cluster are being driven by a variety of internal and external factors:
- The key external drivers for this industry are growth of the Internet and information networks, and global demand for products.
- The key internal drivers are the economic attractiveness of the region, current California labor law, proximity to suppliers, and the local workforce.

# Opportunities Driving the Regional Cluster

- The growth of manufacturing in the Sacramento region has been driven primarily by the abundant labor supply as well as by the excellent quality of life. The physical infrastructure is positioned for further expansion as well. It will also be the continued collaboration between government, business, and the strong local educational system that drives the future success of the region.
- One of the critical issues for this region is developing an effective way to utilize and train temporary workers. Another major issue is to address California laws that are more stringent or burdensome than the rest of the nation, such as current labor law that inhibits use of flexible labor shifts or waste water regulations. Finally, the manufacturers need to collaborate with government and the local educational system to effectively "sell" the region to other manufacturers as a manufacturing arm of Silicon Valley.

## I. Major Components of the Manufacturing Cluster

Figure 1




## INDUSTRY SECTORS:

The manufacturing cluster has enjoyed tremendous growth in the Sacramento region in recent years. Three industries sectors in particular have contributed to this growth and were studied as representative of the overall manufacturing cluster: (1) food processing, (2) electronic components and (3) medical equipment manufacturing.

# Food Processing

The food processing sector is comprised of the following: ice cream and frozen desserts; fluid milk; canned specialties; canned fruits and vegetables; dehydrated fruits, vegetables, and soups; pickles, sauces, and salad dressings; cereal breakfast foods; rice milling; bread, cake, and related products; cookies and crackers; beet sugar; salted and roasted nuts and seeds; animal and marine fats and oils; wines, brandy, and brandy spirits; bottled and canned soft drinks; and food preparations.

# Electronic Components

The electronic components manufacturing sector is comprised of the following: computer terminals; switchgear and switchboard apparatus; vehicular lighting equipment; printed circuit boards; semiconductors and related devices; engine electrical equipment; electrical

equipment and supplies; and space propulsion units and parts.

# Medical Equipment

The medical equipment manufacturing sector is comprised of the following: surgical and medical instruments; surgical appliances and supplies; and electromedical equipment.

These distinctly different industries share the major components that have made this cluster grow in this region, which are as follows:

## PROCESS:

# Research and Development

While many of the firms have other locations outside the Sacramento region that are involved in manufacturing, research and development, design, and distribution, most of the manufacturers do perform research and development at their Sacramento region manufacturing site. The key to successfully getting the product to market the fastest is to have close collaboration between manufacturing and research and development. At one firm, new product development is the fastest growing segment of employment.

# Manufacturing and Assembly

Most facilities perform both manufacturing and assembly work, with very few involved in assembly alone. Traditional manufacturing has been replaced with computer controlled machines that have made the area very competitive. Unlike many regions that have a strong concentration in manufacturing, the Sacramento region has grown rapidly in the past few years which has resulted in the latest equipment and manufacturing practices being incorporated into these new facilities. Many other regions are dealing with the capital costs of retrofitting older equipment to today's standards.

## LOCAL INFRASTRUCTURE:

# Local Universities and Colleges

The higher education system in the Sacramento region plays an important role in both training of the workforce, providing specialized training, and providing a source of research and development.

# Suppliers

Food processing is the one industry that relies on a local supplier base the most. While many of the firms use overseas suppliers to fulfill the bulk of the operations, many use local suppliers for "consumables," such as packaging materials for products. Firms have also been slowly shifting from Bay Area to local suppliers.

# Talent

The workforce is a significant component of the manufacturing cluster. This cluster requires a wide range of talent from specialized R&D scientists and engineers to assembly workers. The region has been able to meet the needs of manufacturers with an abundant supply of low cost labor that is capable of being trained in today's technology. The region has also been able to attract the necessary engineers from the Bay Area, Southern California, and the rest of the country to supplement the local engineering talent.

# Technology

The rapid development of technology has allowed for the steady introduction of new products to the marketplace. It is also technology development that has led to innovative manufacturing processes that make the region's products cost-competitive worldwide.

# Physical Infrastructure

- The transportation system, with minimal traffic congestion and Routes 80 and 5 providing main access to the region, is a vital link for manufacturers. The geographic proximity to the Bay Area and the Port of Oakland has also proved to be essential. The telecommunications infrastructure is more than adequate for manufacturers to use today's information network technology, such as high speed data transmission and videoconferencing. Another physical infrastructure element that is important to manufactures is the region's excellent power quality

## II. Cluster Size and Growth

Figure 2
Sacramento Region Manufacturing Cluster Industry and Growth Chart

| Sectors | Estimated 1993 employment | E.C.F.* 1993 | Payroll per employee 1993 | Average Annual Employment Growth Rate 1988-1993 | Change E.C.F. 1988-1993 | Change in payroll per employee 1988-1993 |
|---|---|---|---|---|---|---|
| Food Processing | 11,033 | 276 | $28,806 | 4.5% | 52 | $3,006 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Electronic Components | 7,881 | 261 | $49,592 | .4% | 26 | $13,252 |
| Medical Equipment | 1,294 | 75 | $32,587 | 2.6% | 2 | $3,299 |
| Total | 20,208 | 231 | $37,155 | 2.8% | 27 | $6,520 |

Source: Minnesota Implan Group, ES202 State Data Packages, 1988, 1993
* E.C.F. = Employment Concentration Factor is the relative concentration of industry employment in the region compared to the nation as a whole (nation=100).

Figure 2 indicates the size of the sectors being studied in the manufacturing cluster in the Sacramento region. These sectors were studied to draw general conclusions about the overall manufacturing cluster. The figure indicates that manufacturing is a major employment contributor to the local economy with more than 20,00 total jobs in these three sectors alone. Other statistics include:

- The relative concentration of employment in food processing and electronic components manufacturing in the Sacramento region is more than double the rest of the nation.
- While employment in electronic components manufacturing grew at a slower rate than food processing and medical equipment manufacturing, the change in payroll grew substantially in both absolute and relative terms.
- While both food processing and medical equipment manufacturing grew in employment at rates faster than the regional average, 1.8%, food processing's concentration in the region increased significantly compared to medical equipment.
- A significant factor to note is that this data does not include the employment of companies who have recently moved to the area, such as Packard Bell with 3800 employees.

## III. Evolution

Prior to Hewlett-Packard's arrival in the region, the economy was focused primarily on government and agriculture. Since Hewlett-Packard's decision to locate in Roseville in 1979, there has been a substantial increase in the number of manufacturing companies which have chosen to locate in the Sacramento region. Numerous multi-national firms have located facilities in the region, as well as small spin-off businesses that provide support services to larger firms.

Most of these companies have relocated or, more commonly, expanded operations from the San Francisco Bay Area or Southern California. Many firms consider the region to be developing into the "manufacturing arm" of Silicon Valley. These relocation decisions, while due to many factors, have been primarily focused on the quality of life and abundant labor pool of the region.

Chief among the quality of life factors are affordable housing and comparatively lower costs of living. Recruiting highly skilled employees from the Bay Area and Southern California has been fruitful since they can afford to purchase a home and can leave traffic

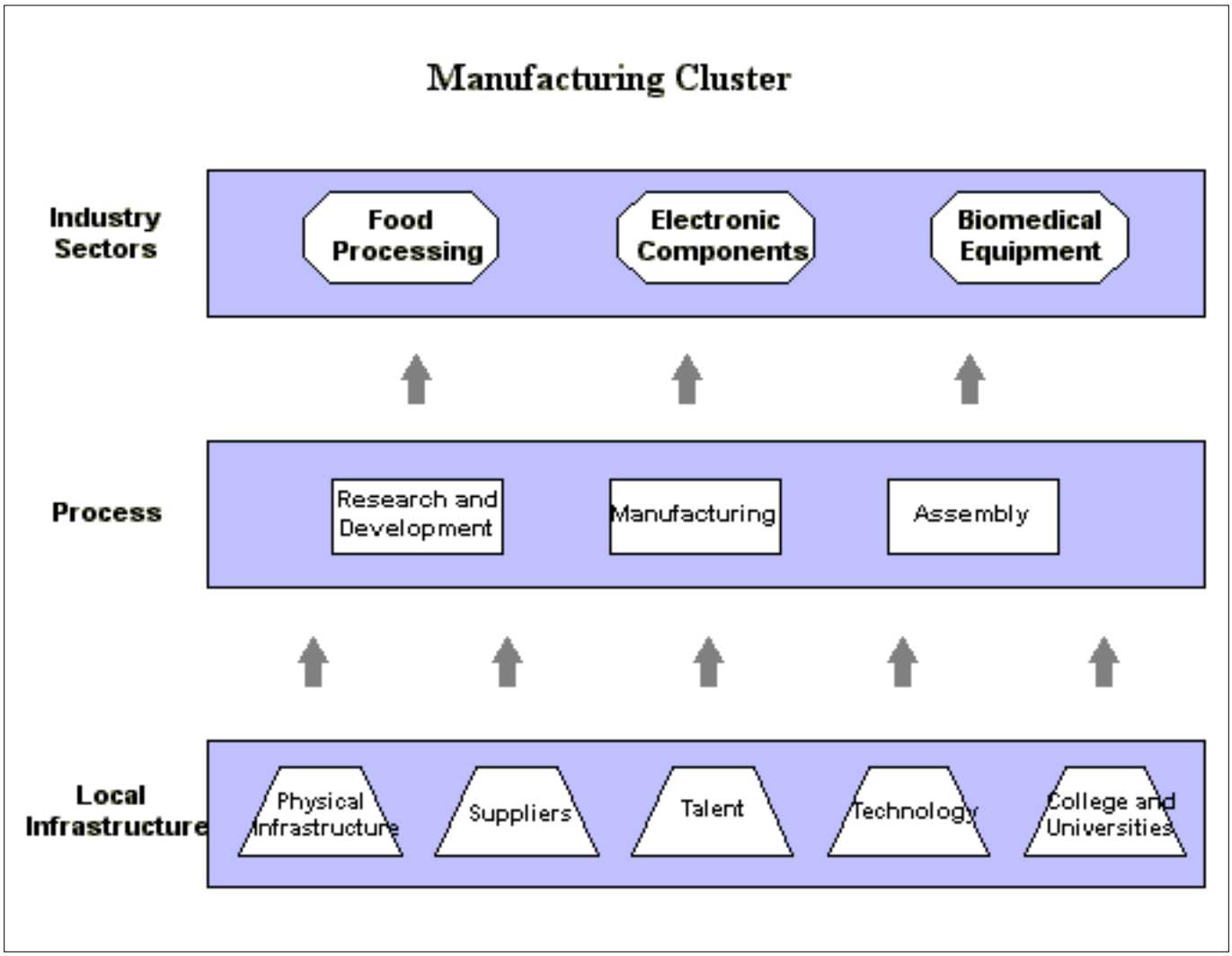
congestion problems behind. Additionally, the K-12 educational system is strong in many parts of the region.

The continued success of this region is fueled by an abundant pool of labor. The labor costs are comparatively lower and workers have demonstrated the capability to be successfully trained by companies for today's technology. The ability and willingness of local colleges and universities to collaborate on workforce training needs are other attractive features of the region.

These factors, as well as a vast supply of developable land, the support of local government, and enticing incentives offered, have made the decision to locate in the Sacramento region an advantageous one for companies using the latest manufacturing technology. The nature of modern manufacturing requires flexibility in all areas, however this is most evident with regard to the labor force. Today's manufacturing jobs evolving in the region demand technical skills rather than the physical strength required in older manufacturing processes.

The ability to meet changing consumer needs requires flexible employment levels, which are achieved by many firms through the use of temporary employees. While the manufacturing of medical instruments, electronic components, and food processing are obviously different processes, the basic skills set required by employers in direct labor and technician jobs are very similar. While the increased concentration of manufacturing in the region has produced more competition for skilled employees, it has had the benefit of increasing the skill levels of the labor pool to draw from for both permanent and temporary needs.

## IV. Cluster Relationships




# Strongest common linkages among the cluster

Food processing, electronic components and biomedical instrument manufacturing produce distinctly different products, yet there are many common relationships within the cluster. While all the products within the manufacturing cluster may not be considered high technology, the nature of the manufacturing in each industry sector is primarily high technology. This relationship has recently resulted in industries drawing upon a common labor pool for positions such as assemblers, technicians, and other skilled workers. The machinery they work on may be different, but require the same functional skill set.

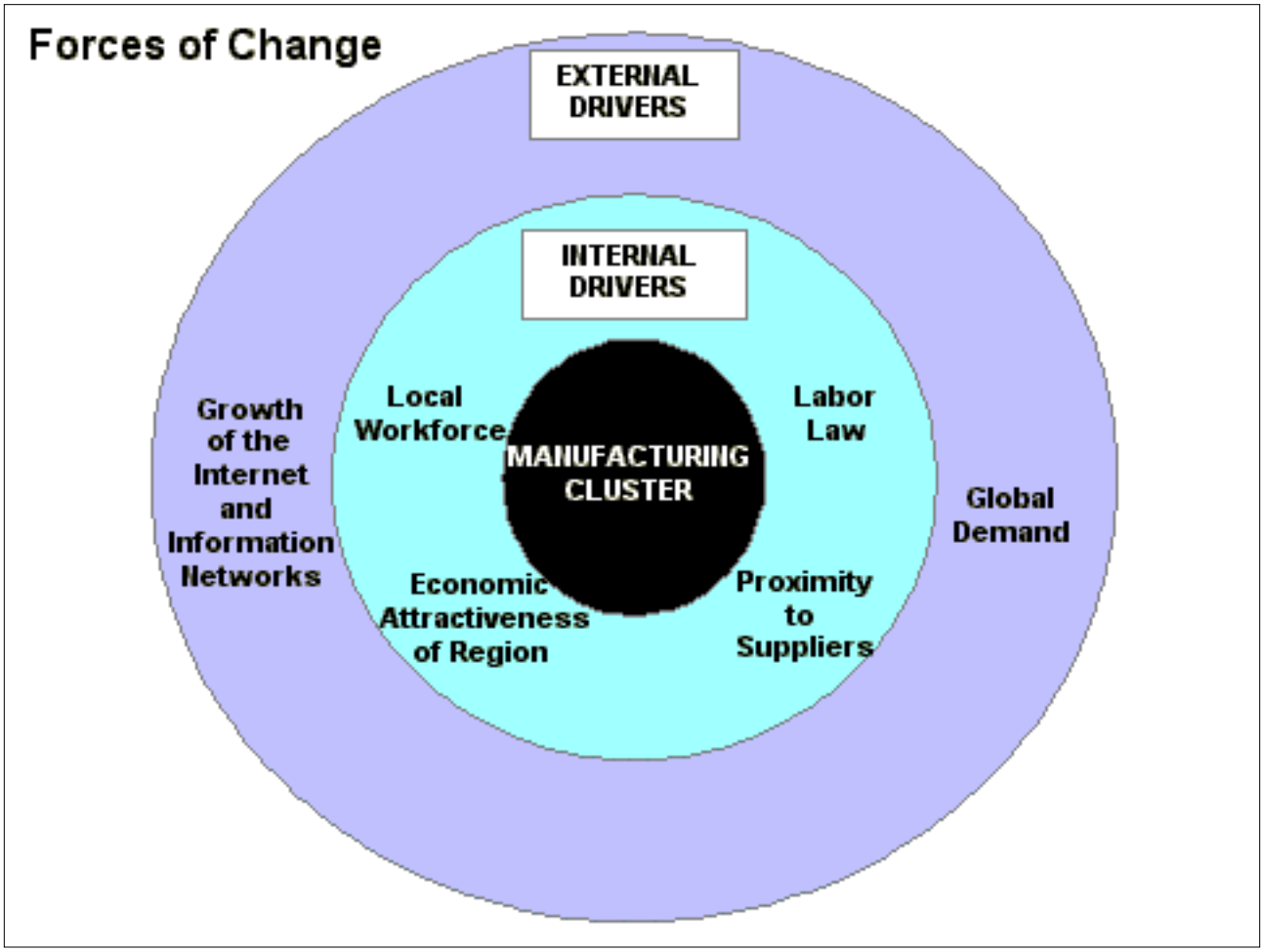
Many manufacturers in the region also use temporary workers to fulfill the changing employment needs that vary with changing product demands and production requirements. Over 20% of one large employer's workforce is comprised of temporary workers. This flexibility is a necessity to be competitive in today's global marketplace. However, if a company does not interpret labor law carefully, the government may declare that these temporary workers are actual employees. In order to comply with the law, one company uses the practice of hiring a temporary worker for no longer than nine months, as well as restricting them from working there for a full year thereafter. However,

this practice results in high worker training costs. Since the basic skill set is similar among manufacturers, one company suggested forming a common temporary worker pool, which the manufacturers could collaborate on to provide basic skills training.

The relationship between the manufacturers and the local colleges and universities is also very strong. Many manufacturers mentioned collaborative relationships with UC Davis, Sacramento State, Chico State and local 2-year colleges, which involve donating equipment as well as personnel. Manufacturers also serve on curriculum advisory boards to further ensure that the engineering and technician programs correlate with current and future employment needs. Most of the colleges also offer on-site training at the manufacturing plants, which offers opportunity for current workers to upgrade skills. Additionally, the manufacturers and universities also collaborate on research and development to varying degrees.

## V. Opportunities Driving Manufacturing Cluster

**Figure 3**




Change and growth in the manufacturing cluster is being driven by a variety of internal and external factors.

### External Drivers

**Growth of the Internet and Information Networks**: The rapid growth of the Internet and unprecedented usage of information networks are creating a new demand for many of the products produced in the region. Modems and CD-ROM drives, which a few years ago were standard in about 10% of computers, now are standard in over 90% of the products produced. The use of electronic mail, high speed data transfer, and videoconferencing has not only increased demand for products produced in the region, but has allowed the manufacturers to communicate effectively with strategic partners, clients, and other divisions.

**Global Demand**: The demand for electronic products, medical equipment, and food products has served a growing global marketplace. Most of the companies studied produced products primarily for the North, Central, and South American markets, while some with highly specialized niche products served the world market, with strongest ties to the Pacific Rim.

### Internal Drivers

**Economic Attractiveness of Region**: The availability of low cost land for both business development and employee housing, the reasonable costs of living, and incentives results in the Sacramento region being extremely attractive to many companies. Companies that have recently moved to the area have stated that having one point of contact to deal with the various agencies has made the move an easier one. While there are exceptions, most manufacturers stated that their relationships with local officials are cooperative rather than adversarial in nature. In order for the region to maintain it's economic attractiveness, the "pro-business" attitudes of local communities must continue and further develop into strong partnerships.

**Labor Law**: One area that was consistently mentioned as an opportunity for reform that would greatly impact manufacturers is current California labor law. One area that especially impacts manufacturers is in regards to the "40 hour work week/8 hour work day" rules. For example, this law makes it difficult and costly for manufacturers to schedule workers in shifts with four day work weeks. Capital intensive industries like manufacturing often require operations around the clock to recoup their investment. This is one example of California law that is more restrictive and burdensome than federal law that makes it difficult for local manufacturers to compete globally.

**Proximity to Suppliers**: The manufacturing operations located in the region are supplied through channels of distribution that make the region an attractive one. The agricultural supplies for the food processing plants are obtainable primarily from the surrounding abundance in California. Supplies for other industries from the Pacific Rim are easily channeled through the Port of Oakland. While many companies still use Bay Area companies for other supplies, the opportunity exists to develop a strong local base.

**Local Workforce**: The abundance of labor in the Sacramento region has been a primary driver for firms looking to locate in the area. The shift in manufacturing away from manual procedures and replacing that with high-technology based operations has opened new opportunities to utilize the available labor pool in a new way. The types of positions

that are required provide a better economic lifestyle for those workers who are willing to undertake the requisite training, thus elevating the quality of life for many workers while still costing firms less than similarly skilled workers in other regions. Local initiatives to further improve the K-12 education should be strengthened to help ensure that the region is known for its skilled labor market.

## VI. Requirements for Growth

| | Strengths | Constraints |
|---|---|---|
| **Workforce** | ● Abundant supply of direct labor and temporary workers<br>● Relatively low cost<br>● Strong link with colleges and universities to provide workforce training | ● Basic skills in K-12 need improvement<br>● Need to go out of area for an adequate supply of engineers<br>● ETP process should be streamlined |
| **Technology** | ● Some R&D is performed at most locations<br>● Most manufacturing facilities contain state-of-the-art equipment | ● The Bay Area is still relied upon heavily for R&D |
| **Capital** | ● Development of new technology is financed internally by companies | |
| **Physical Infrastructure** | ● Transportation for people and goods<br>● Close to Port of Oakland<br>● Power quality and reliability | ● Lack of direct flights out of area |
| **Information Infrastructure** | ● Videoconferencing and e-mail is a vital way of communicating with other operating units | |
| **Tax and Fiscal Policy** | | ● State taxes are high |
| **Regulatory Policy** | | ● Labor law<br>● Waste water regulations (for the food processing industry)<br>● CA regulations are stricter than the rest of the nation. |
| **Quality of Life** | ● Number one reason for many companies locating here<br>● Low-cost housing | ● Need to develop/enhance cultural activities<br>● Air pollution is a problem that needs to be addressed |
| **Networking** | ● Tends to be at high level at Chamber of Commerce type organizations | ● Competitive nature of business<br>● Local manufacturers need to collaborate to "sell" this region to other companies |
| **Suppliers** | ● Local suppliers are used for consumables<br>● Agricultural supply base is strong | ● Overseas suppliers are utilized, primarily from the Pacific Rim |

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Background:
California Economic Strategy Panel
Sacramento Regional Forum

# Information and data processing related industries in the Sacramento Valley Region

**Who are these information processing companies in Sacramento and what do they do ?**

The significant employers of data processing activity in the region are large service sector firms in the areas of insurance, financial services, health care, and communications providers. These companies are involved in diverse markets serving thousands of customers both in and out of the Sacramento Valley. They centralize information and data processing activities to achieve economies of scale.

These industries employ significant numbers of people in areas with considerable key entry work. In general these activities can be broken out as follows:

- billing
- customer service
- accounting
- purchasing
- internal support (such as payroll)

In financial services, activities include information intensive work such as mutual fund management (Franklin Resources) and middle-market lending (Wells Fargo). In both the health care and insurance industries (e.g., Foundation Health and USAA) considerable data processing work is done to facilitate claims, appraisals, adjustments, underwriting, and client intake and follow-up. In communications-related industries considerable information-intensive work is required for customer services and ethnic targeted marketing.

Some examples of companies conducting information processing in the Sacramento region include the following (estimated number of employees in parenthesis):

| | | | |
|---|---|---|---|
| ADP- Automatic Data Processing (525) | EDS (200) | IRS (650) | USAA (1,100) |
| American President Real Estate (20) | First Nationwide (500) | MCI Telecommunications (500) | U.S. Computer Services (2,250) |
| Bank of America Payroll services (800) | Foundation Health (400) | McKesson (100) | Vision Service Plan (TBD) |

| | | | |
|---|---|---|---|
| Cigna Corp. (320) | Franklin Resources (650) | Pacific Bell (4,000) | Wells Fargo (TBD) |
| CSAA (100) | GTE Data Services (200) | Teale Data Center (420) | |

**Why are such activities located in the Sacramento region ?**

Information and data processing activities are located in the region for a variety of reasons. Often these reasons are related to the San Francisco Bay Area. The Sacramento region has been able to draw upon its unique attributes relative to the Bay Area to meet the needs of the expanding information-based economy.

*Seismic Stability*
A primary attraction for both public utilities and financial service providers is the relative seismic stability of the Sacramento region. These firms have often grown their information processing activities close to their Bay Area headquarters (e.g.Wells Fargo, Pacific Bell). However, in order to protect against loss of services in the case of a disaster they have moved some operations out of the Bay Area. Sacramento's seismic stability is highly attractive.

*Sacramento Region Market Access*
Other companies have had a much longer presence in the region providing services to Sacramento Valley residents. For example, Foundation Health, which handles information processing activities in Rancho Cordoba for its operations throughout the west, southwest, and southeast, was founded in the region and began by providing health services to Sacramento residents. Its considerable market presence in the region, along with other factors has kept its operations centralized at Gold River. U.S. Computer Services, founded in 1965, has also grown up in the Sacramento region.

*Quality of Life*
The region also has an attractive quality of life for the kind of individuals these types of firms are looking for. Often mentioned attributes of the region's quality of life are the affordable housing and cost of living, the midwest feel, the proximity to the Sierra-Nevada, the Bay Area, and the California coast, as well as the perceived strong family values.

*Proximity to State Capitol*
The presence of the State Capitol also attracts information processing intensive industries to the region. The regulated utilities, insurance industry, and health care industry often partake in the crafting of State policy. Being located in Sacramento can help achieve greater access. For example, being located in Sacramento allows USAA to stay better abreast of changes in insurance regulation. In addition, the state's considerable degree information processing lends to a labor pool of individuals familiar with information intensive work.

*Other Attributes*
Other attributes include affordable commercial real estate, a perceived accommodating business climate, the size of the labor pool relative to competitor regions such as Reno, a

labor pool with varied educational attributes (for example, the different levels of certification from Davis, Chico, SAC State, Golden Gate, National, Phoenix, and the community colleges), and a perceived strong work ethic.

**What barriers exist to the future growth of these industries in the Sacramento region ?**

The Sacramento region faces several surmountable barriers and unique opportunities for growing the information and data processing industries in the future.

*Education*
Education poses some compelling issues for regional growth of information-intensive industries. The region's post-secondary educational system has served these industries well. Accredited four-year institutions and other educational institutions have created a consistent flow of capable talent comfortable with information-intensive work. Industry opportunities for high school educated individuals, however, have not been as easily accommodated. Poor writing and math skills cause difficulties for these individuals entering information processing work. In addition, firms have had to look outside the region to fill their technical personnel and senior management positions. The post-graduate education system has not had the breadth and adaptability necessary to meet the challenges of these quickly changing inforrnation-intensive industries.

*Rising Cost of Commercial Space*
As the glut of office real estate from the 1 980's has been slowly filled, an important attribute of the region to information processing activities --affordable commercial space-- has become a worry for expanding firms. Some very attractive land for commercial development sits idle due to fears of contamination from old Aerojet activities. A considerable concern is how Sacramento can maintain those quality of life attributes which set it apart from the Bay Area and at the same time accommodate these growth pressures.

*Image Development*
An additional barrier to growth of these industries in the region has been an image problem with Sacramento when these firms must go outside the region to attract advanced skilled talent. Sacramento is perceived as having a less than attractive quality of life. It is perceived as boring.

*Footloose Nature of Industries*
Another potential barrier to growth of these industries in the Sacramento region is that they tend to be very footloose. It has been a delicate balance of attributes which have made Sacramento an attractive region for these industries. Maintaining that balance as the region grows is not an easy task.

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